

HOWARD W. SAMS

SAMS PHOTOFACT[®] CB RADIO SERIES



CB-23
23
AUGUST 1969



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HOWARD W. SAMS & CO., INC.

Indianapolis, Indiana



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

ONLY THOSE PERSONS PROPERLY LICENSED ARE PERMITTED TO MAKE REPAIRS OR ADJUSTMENTS WHICH MAY RESULT IN ILLEGAL OPERATION. (REFER TO FCC RULES AND REGULATIONS PART 95, SUBPARTS C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



JOHNSON MESSENGER 223 (242-223E)
(Revisions A, B, C & D)

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

A1 thru A8, A10, A11.....GENERAL CEMENT #8606, 8606L, 8869...WALSCO #2543, 2544, 2588
A12, A13, A14.....GENERAL CEMENT #9296, 9297, 9300...WALSCO #2510, 2546, 2547
A9, A15 thru A20.....GENERAL CEMENT #5003, 8196, 8273....WALSCO #2577, 2519, 2525

RECEIVER

Connect a DC VTVM to Δ and an AC VTVM across speaker terminals. Set Volume Control fully clockwise, and Squelch Control clockwise just past "Off" position.

SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru .01mfd to Pin 1 (Grid) of V2 (Rec. Mixer), low side to Chassis. Tune to 455KC (Mod.).	Any	A1 thru A8	Adjust for maximum. CAUTION: Do not Key Transmitter during Receiver Alignment.
SEE SYNTHESIZER ALIGNMENT BELOW FOR OSCILLATOR ALIGNMENT			
High side thru a 6db attenuator to an antenna connector, low side to chassis. Tune to 27.105MC (30% Mod.).	12	A9	Adjustment made from core out position. Adjust for maximum on AC VTVM, then peak on DC VTVM at Δ with input signal reduced to give reading of approximately 1 volt at Δ .
High side thru a 6db attenuator to an antenna connector, low side to chassis. Tune to 26.965MC (30% Mod.).	1	A10	Adjust top (Primary) slug starting from top of can to second peak near bottom of primary. Slug will be approximately 7/16" from top of can when properly tuned.
High side thru a 6db attenuator to an antenna connector, low side to chassis. Tune to 27.255MC (30% Mod.).	23	A11	Adjust bottom (secondary) slug starting from bottom of can for first peak.
Reduce signal input to produce approximately 1 volt at A.			Repeat adjustments of A9 & A11 for maximum at Δ with luv signal input reading at Δ should be at least .6 Volts.

"S" METER ADJUSTMENT

		With Power off, adjust mechanical Zero for reading to extreme left of "S" Meter.
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HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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JOHNSON MODEL MESSENGER 223

ALIGNMENT INSTRUCTIONS (Continued)

" S " METER ADJUSTMENT (Cont.)

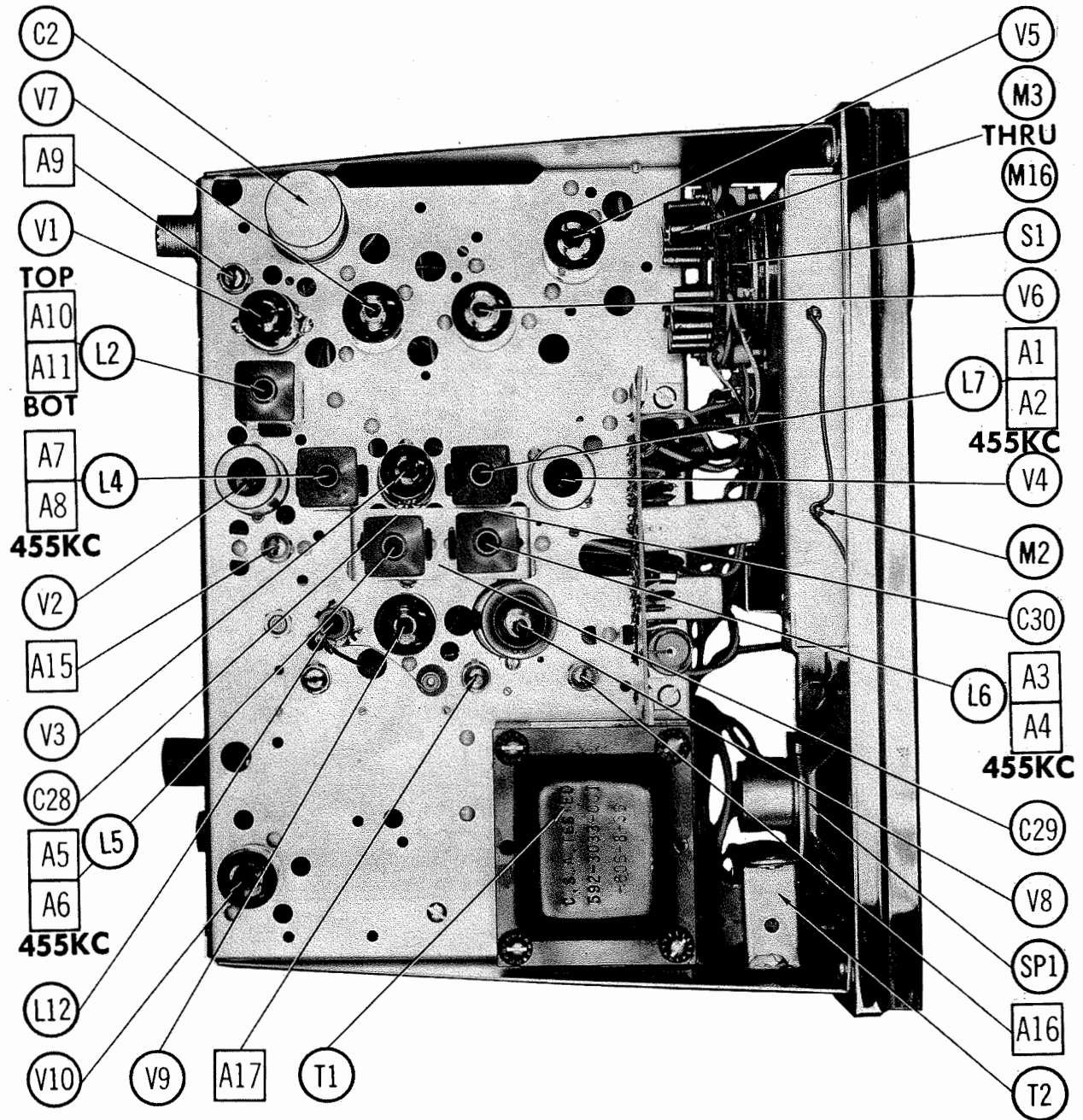
SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
No Signal	12	R4	Adjust for Zero Reading on "S" Meter.
High side thru .01mfd to antenna connector, low side to chassis. Tune to 27.105MC with 100uv output.	12		Performance Test. "S" Meter should read between "S8" and 10db above "S9."

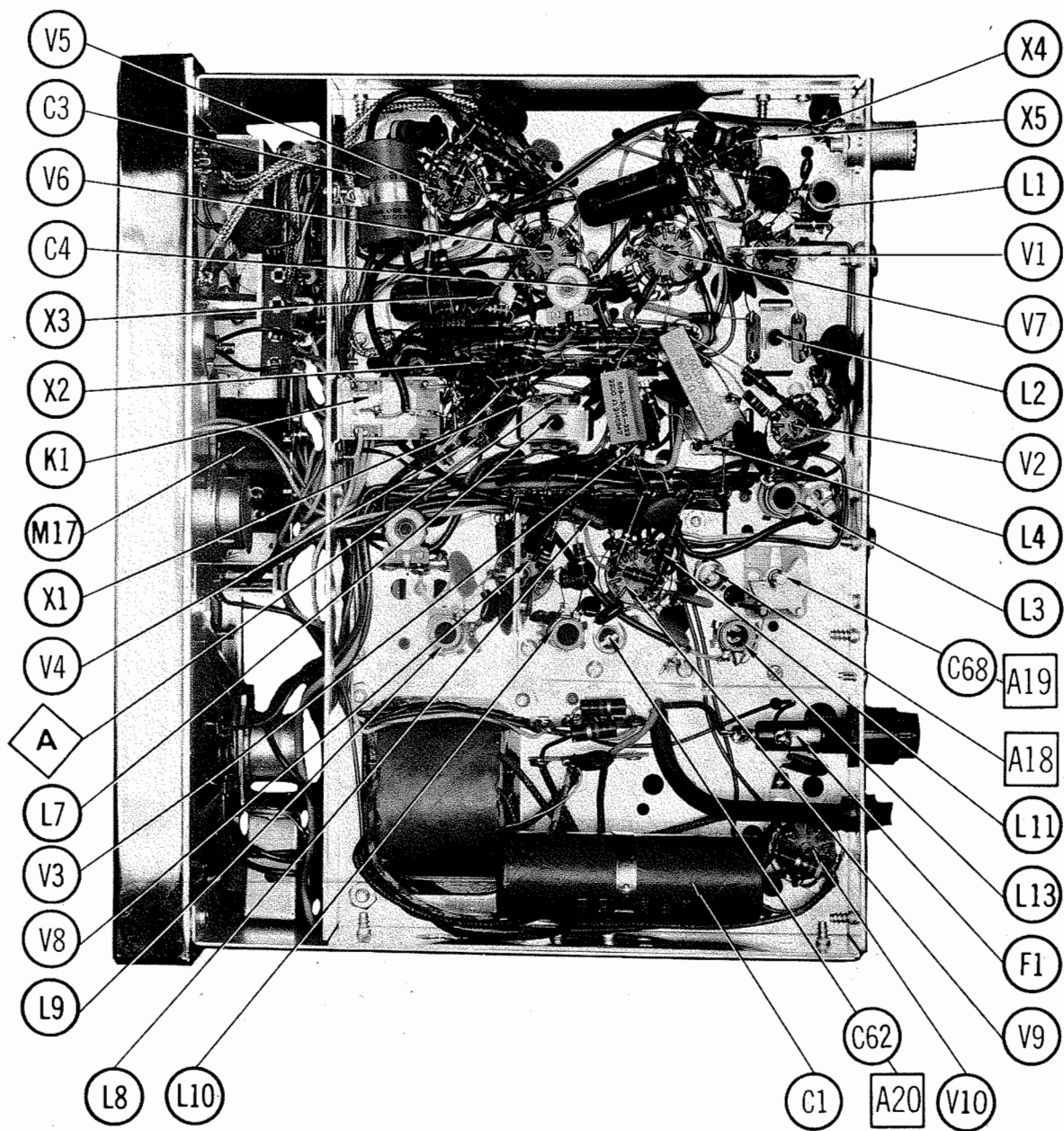
SYNTHESIZER ALIGNMENT

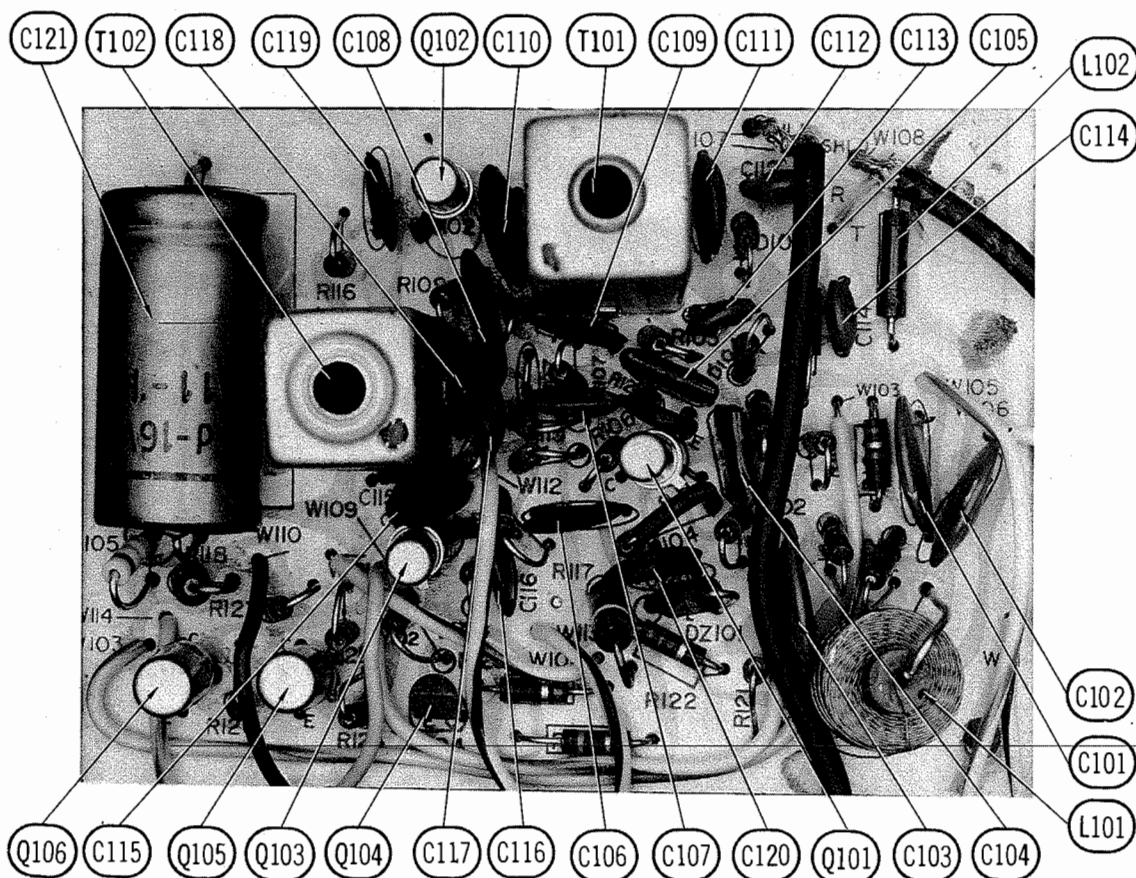
INDICATOR	ADJUST	REMARKS
		Measure Source 2. Voltage should be -10V $\pm$.5V.
RF Voltmeter or DC VTVM with RF Probe.	A12	Connect Meter to $\diamond B$ on Synthesizer Board. Set Channel Selector to 23. Adjust A12 to point where there is an indication of RF on Meter. Back slug off toward top of can. Then adjust slug 1/2 turn beyond the oscillator starting point.
"	A13,A14, A15	With Meter still connected to $\diamond B$, change Channel Selector to 12. Adjust for maximum reading (Approximately 225mv) on meter. (Tune on outside of peaks).

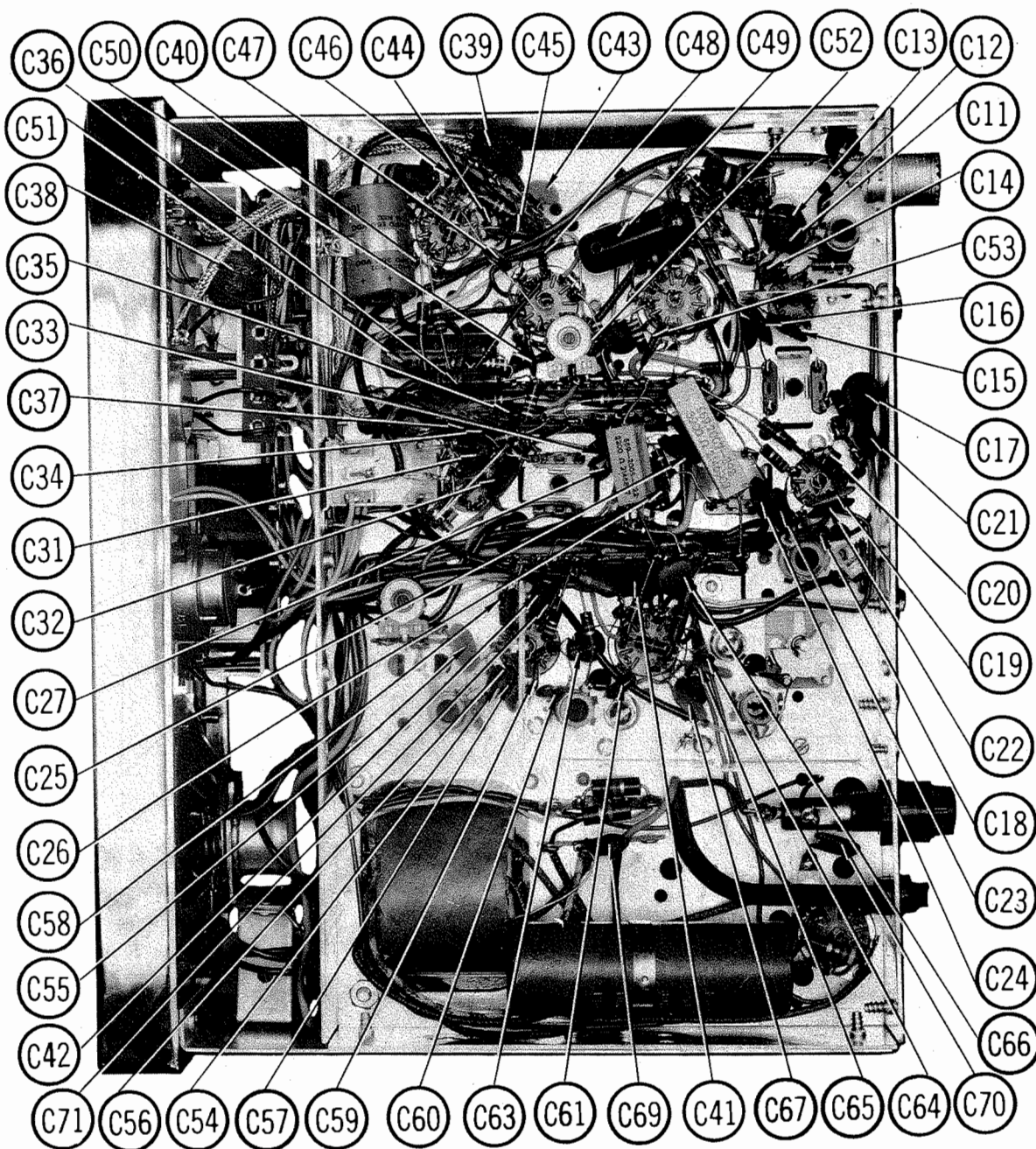
TRANSMITTER

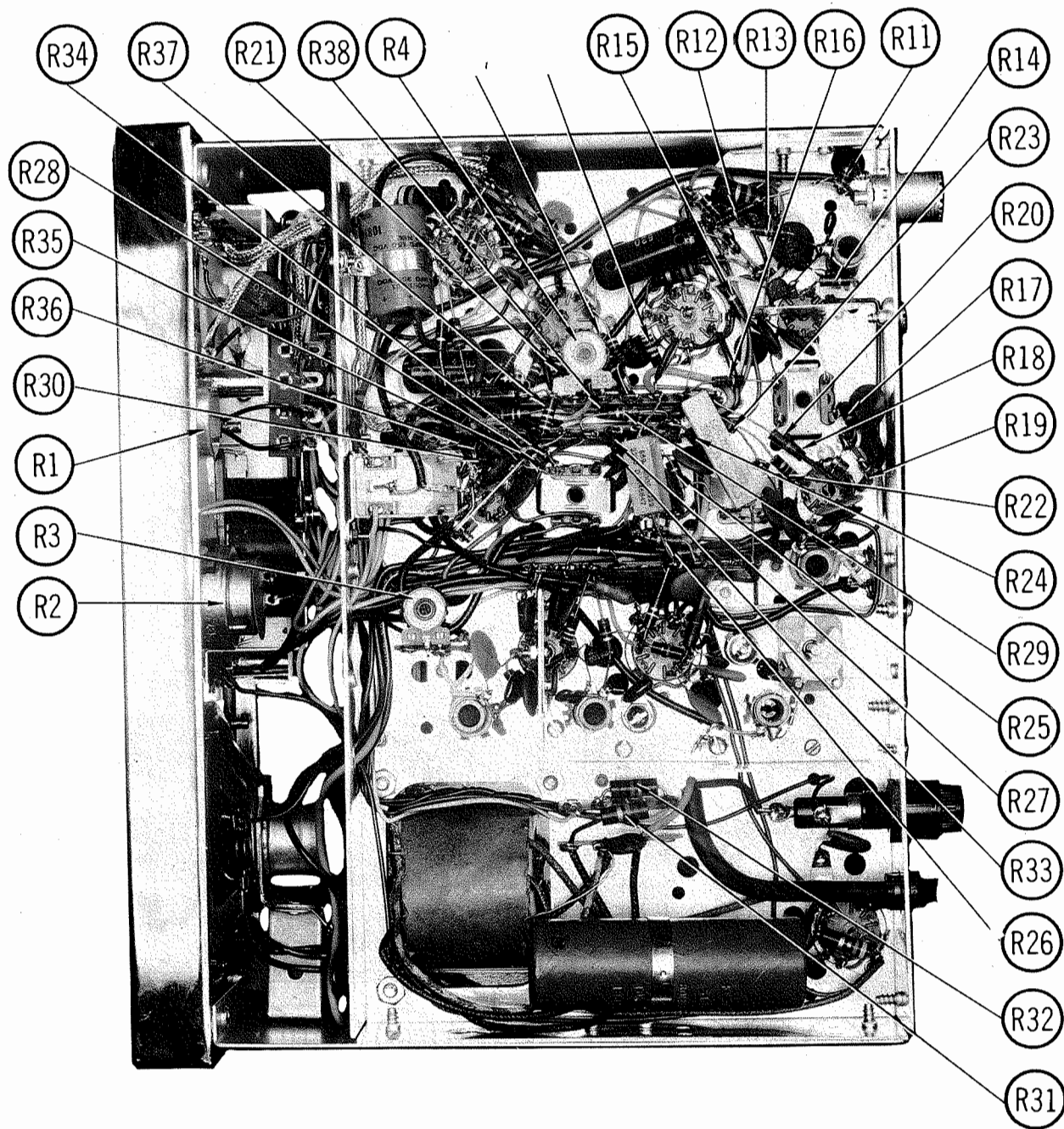
INDICATOR	ADJUST	REMARKS
DC VTVM	A16, A17	Connect DC VTVM to $\diamond C$, Key Transmitter and adjust for maximum negative voltage on grid of V9 (Final Amp). Approximately -20V. Channel Selector to 12.
DC VTVM, RF Wattmeter, DC Voltmeter.	A18, A19	Connect DC VTVM to $\diamond C$ and DC Voltmeter R65 (Meter shunt). 1-volt drop across R65 equals 10ma plate current. Standard Plate Current is 19ma. Key Transmitter. First adjust for maximum and then adjust A18 (Plate Load) for dip in plate current and by adjusting A19 (coupling) for the desired level of the dip. Dip should be at the standard Plate Current or less.
"	A20	Key Transmitter. When adjusting A18 thru dip, note DC VTVM connected at $\diamond C$. If voltage increases as A18 is adjusted, counterclockwise turn A20 (Neutralization) 1/2 turn clockwise and repeat above adjustment. Repeat this step until no increase is noted. If voltage increases as A18 is adjusted clockwise, turn A20 (Neutralization) 1/2 turn counterclockwise and repeat above adjustment. Repeat this step until no increase is noted.
		An adjustment of A20 (neutralization) will be found where there will be a slight increase or no increase on either side of dip.
"	A18,A19	Readjust for equal output on Channels 1, 12, 23.
Meter on Front Panel	R4	Key Transmitter with no modulation. Adjust for a reading of 4 on black scale of meter.

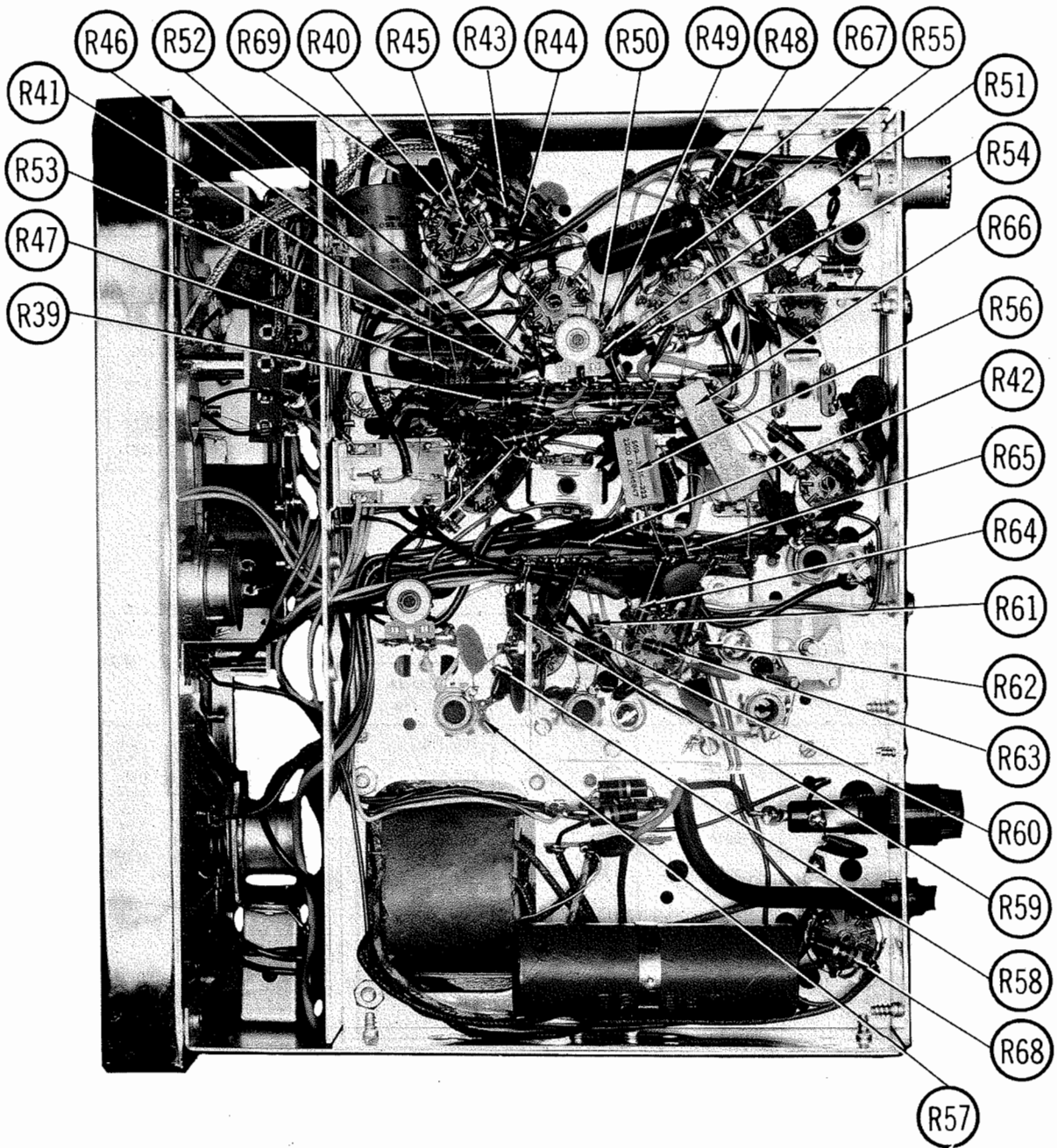












PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TUBES

AMPEREX			GENERAL ELECTRIC			RCA			SYLVANIA		
ITEM No.	USE		TYPE			ITEM No.	USE		TYPE		
V1	RF Amp		6BJ6			V6	Squelch - 2nd AF Amp		6AW8A		
V2	Rec Mixer		12BE6			V7	Output - Modulator		12AB5		
V3	1st IF Amp		6BJ6			V8	Xmtr Driver		8077/7054		
V4	2nd IF Amp		6BJ6			V9	Final Amp		7061		
V5	1st AM Amp - Mic Amp		12AT7			V10	Rectifier		12BW4		

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA						
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q101	3008 (3024)(1)	Synthesizer Osc.	576-0003-008	DS-41	GE-9	TR-17	HEP3	SK3006	ECG 126
Q102	3008 (3024)(1)	Synthesizer Mixer	576-0003-008	DS-41	GE-9	TR-17	HEP3	SK3006	ECG 126
Q103	3008 (3024)(1)	Local Oscillator	576-0003-008	DS-41	GE-9	TR-17	HEP3	SK3006	ECG 126
Q104	3011	Mode Inverter	576-0003-011		GE-8	TR-09	HEP641	SK3010	ECG 103
Q105	1003	Switch Driver	576-0001-003	DS-26	GE-2	TR-14	HEP254	SK3004	ECG 102
Q106	1003	Switch Driver	576-0001-003	DS-26	GE-2	TR-14	HEP254	SK3004	ECG 102

(1) Part No. 576-0003-024 used in late revision D & E.

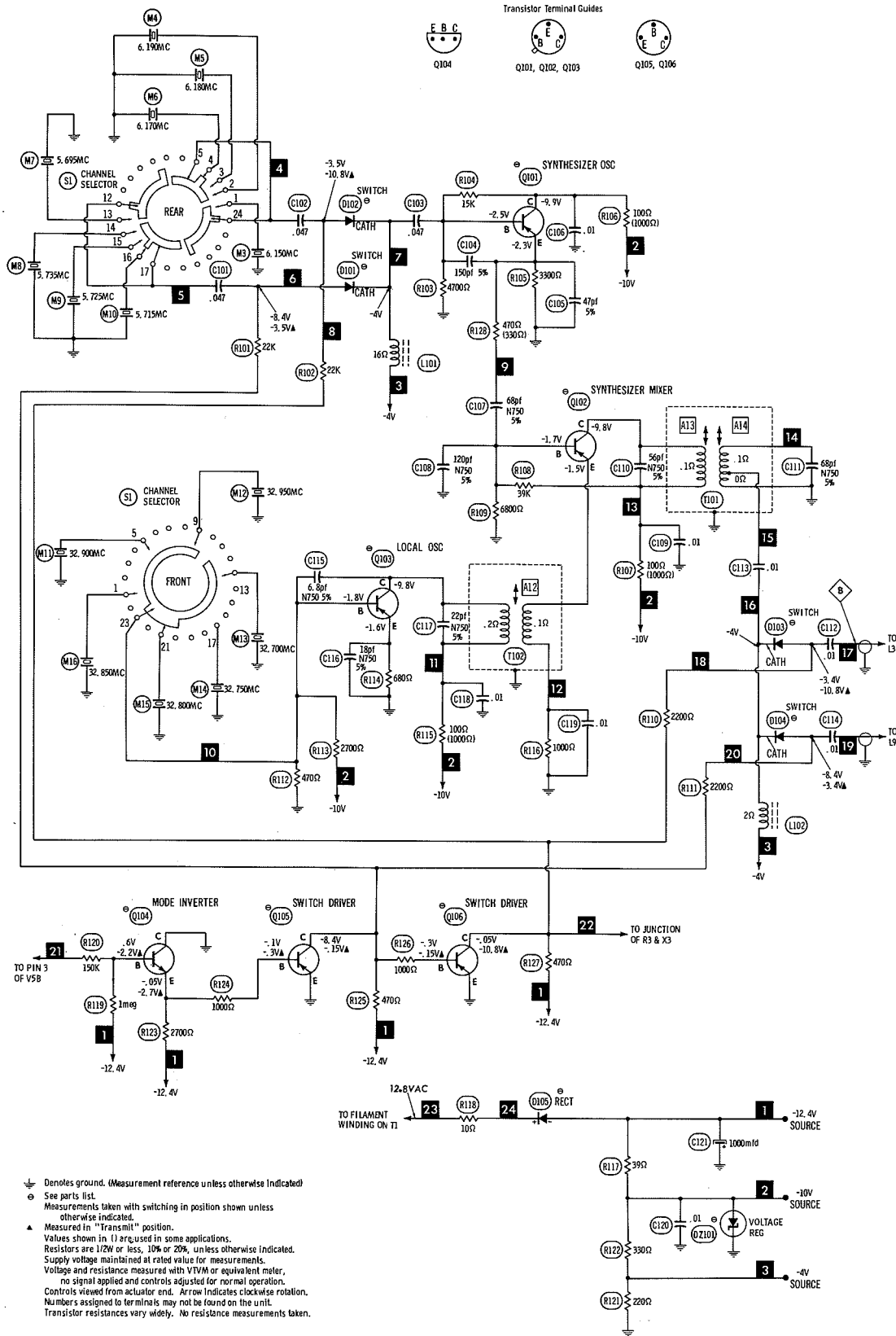
POWER RECTIFIERS & SIGNAL DIODES

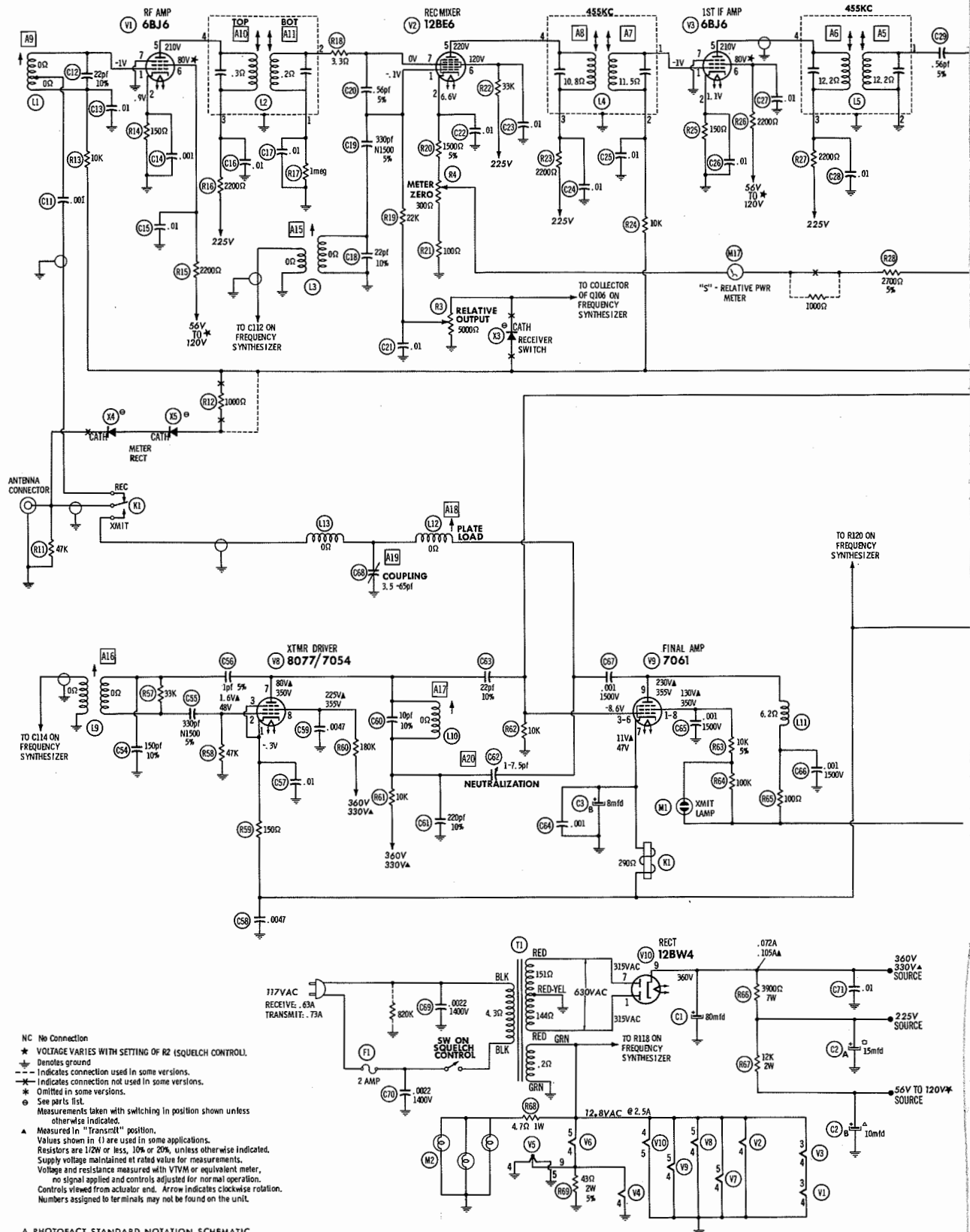
ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
D101	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		60ma 100V
D102	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		50ma 200V
D103	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		60ma 100V
D104	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		50ma 200V
D105	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		60ma 100V
D105	523-0001-002	GE-504A	5A4D or 8D4	ECG 116 or ECG 117	SK3016 or SK3030	50ma 200V
DZ101	523-2003-100		1ZM10T5	ECG 140		1 Amp, 200V
X1	523-1000-067 (1N67A)	1N34AS	1N67A	ECG 109		Zener 10V, 1W, 5%
X2	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		
X3	1N3575 (523-1000-881) (1N881)	GE-504A	8D4	ECG 116		
X4	523-0006-002	GE-504A	8D4	ECG 116		75V, 50ma
X5	523-0006-002	GE-504A	8D4	ECG 116		75V, 50ma

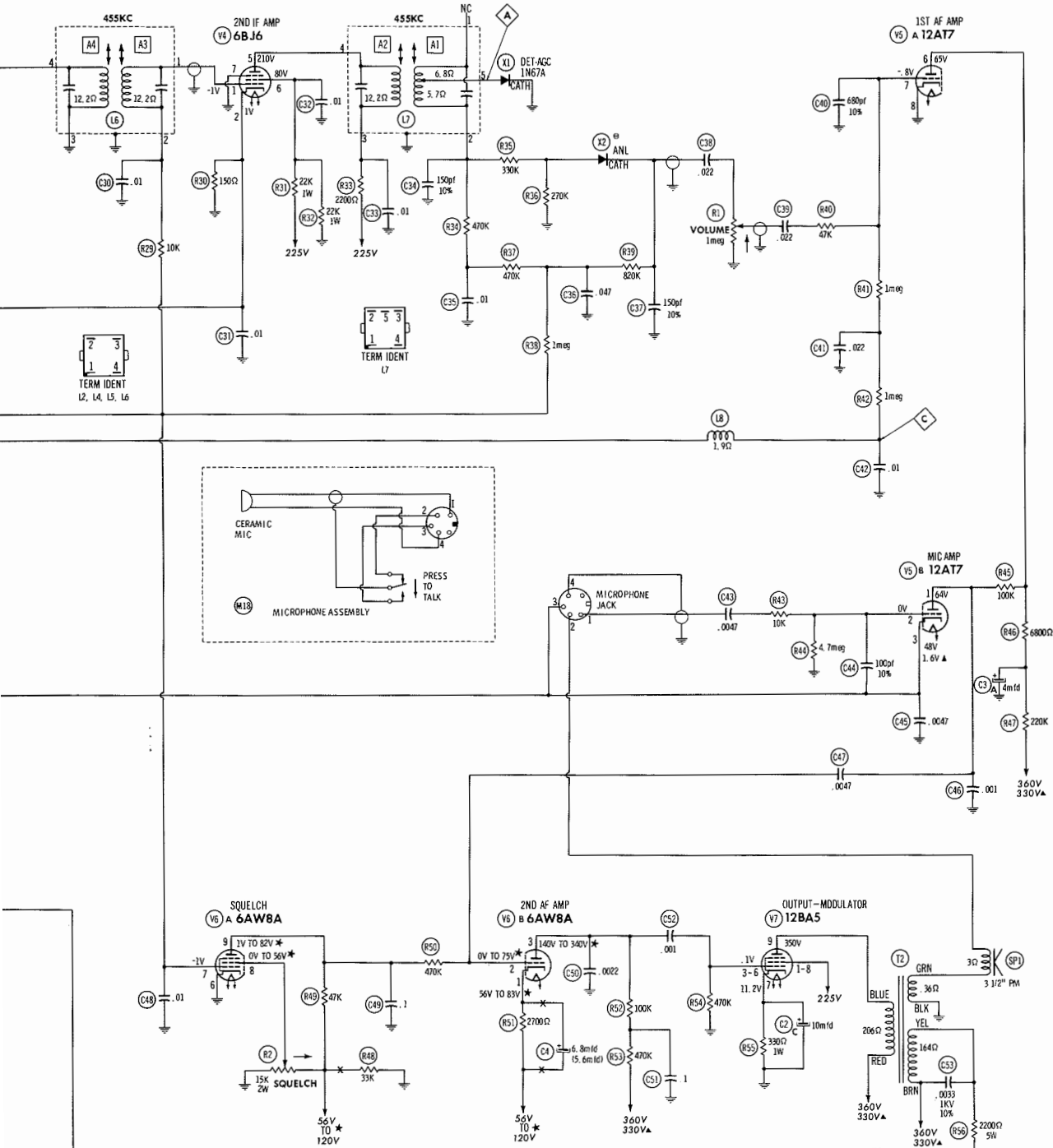
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	80 450V	510-4019-004	PRS1780		WBR80-450	QT1-24	TC80A	TVA-1716
C2A	15 300V	022-1541-001	AFH3-35		CC0260A	XC3-23.1	FP330.5A	TVL-3639.6
B	10 150V							
C	10 25V							
C3A	4 350V	510-4051-001	PRS1600		WBR5-500	QT1-2.1	TC697A	TVA-1601
B	8 150V		PRS1405		WBR10-500	QT1-6.1	TC41A	TVA-1405
C4	6.8 15V				TYR13BF685K		TAS685K0	196D685X0035
	(5.6)15V	510-2023-569						FB
C121	1000 16V	510-4006-005	PRS1230	EA15-1000	BR1000-15	QT1-32	TC1501A	TL-1166.5

(CONTINUED ON PAGE 66)







RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6B16	21K	150Ω	FIL	FIL	6100Ω†	18K†	0Ω		
V2	12B6	22K	1900Ω	FIL	FIL	6100Ω†	37K†	1mΩ		
V3	6B16	21K	150Ω	FIL	FIL	6100Ω†	18K†	0Ω		
V4	6B16	21K	150Ω	FIL	FIL	6100Ω†	19K†	0Ω		
V5	12A17	340K†	4.7mΩ	620K†	FIL	FIL	230K†	2mΩ	0Ω	FIL
V6	6AW8A	19K†	533K†	570K†	FIL	FIL	0Ω	6000Ω	14K†	63K†
V7	12A5	3900Ω†	NC	470K	FIL	FIL	470K	330Ω	3900Ω†	220Ω†
V8	8077 7054	150Ω	47K	150Ω	FIL	FIL	NC	10K†	184K†	
V9	7061	125K†	NC	10K	FIL	FIL	10K	290Ω	125K†	2300Ω†
V10	12BW4	210Ω	NC	NC	FIL	FIL	NC	210Ω	NC	
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

† MEASURED FROM PIN 9 OF V10

* VARIES WITH SETTING OF R2

▲ PIN 3 OF MICROPHONE JACK SHORTED TO GROUND

JOHNSON MODEL MESSENGER 223

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	.001		GPD X5F102K	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C12	22 10%		ADM-15-220	CPR-22J	CD15E220K500	DM-15-220K	SX422	MS-422
C13	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C14	.001		GPD X5F102K	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C15	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C16	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C17	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C18	22 10%		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C19	330 N1500 1KV 5%	#510-3041-331	ADM-15-220	CPR-22J	CD15E220K500	DM-15-220K	SX422	MS-422
C20	.56 5%	#510-9002-568						10TCW-T33
C21	.01		GPD X5S103K	TCZ-R5	BYX601ZU103P	CCD-103	JF110	10TS-S10
C22	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C23	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C24	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C25	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C26	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C27	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C28	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C29	.56 5%	#510-9002-568		TCZ-R5	BYX601ZU103P	CCD-103	JF110	10TS-S10
C30	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C31	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C32	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C33	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C34	150 10%		ADM-15-151	CPR-150J	CD15F151K500	DM-15-151K	SX315	424MC1500J501
C35	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C36	.047 400V		DBE6S47		DMF4S47	4DP-3-473	PVC4147	4PS-S47
C37	150 10%		ADM-15-151	CPR-150J	CD15F151K500	DM-15-151K	SX315	424MC1500J501
C38	.022		GPD Z5U203P	DD-203	BYT601ZU203Z	CCD-203	GP120	10TS-S20
C39	.022		GPD Z5U203P	DD-203	BYT601ZU203Z	CCD-203	GP120	10TS-S20
C40	680 10%		ADM-19-681	CPR-680J	CD19F681K500	DM-15-681K	SX368	424ME6800J501
C41	.022		GPD Z5U203P	DD-203	BYT601ZU203Z	CCD-203	GP120	10TS-S20
C42	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C43	.0047		GPD X5U472P5	DD-472	BYX601ZU472M	CCD-472	GP247	5GA-D47
C44	100 10%		ADM-15-101	CPR-100J	CD15F101K500	DM-15-101K	SX310	424MC1000J501
C45	.0047		GPD X5U472P5	DD-472	BYX601ZU472M	CCD-472	GP247	5GA-D47
C46	.001		GPD X5F102K	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C47	.0047		GPD X5U472P5	DD-472	BYX601ZU472M	CCD-472	GP247	5GA-D47
C48	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C49	.1 400V		DBE4P1		DMF4P1	4DP-3-104	PVC401	4PS-P10
C50	.0022		GPD X5F222K	DD-222	JBX601YP222K	CCD-222	GP222	10TS-D22
C51	.1 400V		DBE4P1		DMF4P1	4DP-3-104	PVC401	4PS-P10
C52	.001		GPD X5F102K	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C53	.0033 1KV 10%		GPD X5R332K	DD-332	JBV601YP332K	CCD-332	JF233	10TS-D33
C54	150 10%		ADM-15-151	CPR-150J	CD15F151K500	DM-15-151K	SX315	424MC1500J501
C55	330 N1500 5%							10TCW-T33
C56	1 5%		NPO-DI 1.0	TCZ-1	BYX601ZU103P	CCD-103	CN0510	10TCC-V10
C57	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C58	.0047		GPD X5U472P5	DD-472	BYX601ZU472M	CCD-472	GP247	5GA-D47
C59	.0047		GPD X5U472P5	DD-472	BYX601ZU472M	CCD-472	GP247	5GA-D47
C60	10 10%		ADM-15-100		CD15C100K500	DM-15-100K	SX410	MS-41
C61	220 10%		ADM-15-221	CPR-220J	CD15F221K500	DM-15-221K	SX322	424ME2200J501
C62	1-7.5	#512-1002-004						
C63	22 10%		ADM-15-220	CPR-22J	CD15E220K500	DM-15-220K	SX422	MS-422
C64	.001		GPD X5F102K	DD-102	JBS601YP102K	CCD-102	GP210	10TS-D10
C65	.001 1500V		HVD-15-1000	DD30-102	HVX162XP102M	3CCD-102	2HV210	30GA-D10
C66	.001 1500V		HVD-15-1000	DD30-102	HVX162XP102M	3CCD-102	2HV210	30GA-D10
C67	.001 1500V		HVD-15-1000	DD30-102	HVX162XP102M	3CCD-102	2HV210	30GA-D10
C68	3.5-65	#148-0009-004						
C69	.0022 1400V		HVD-15-2200	DD30-222	ACX142ZU202P	3CCD-202	UAC220	125L-D20
C70	.0022 1400V		HVD-15-2200	DD30-222	ACX142ZU202P	3CCD-202	UAC222	125L-D20
C71	.01		GPD X5S103K	DD-103	BYX601ZU103P	CCD-103	JF110	10TS-S10
C101	.047 16V		TTP-05	UK16-503	HOV101ZV503Z		TA150	TGL-S50
C102	.047 16V		TTP-05	UK16-503	HOV101ZV503Z		TA150	TGL-S50
C103	.047 16V		TTP-05	UK16-503	HOV101ZV503Z		TA150	TGL-S50
C104	150 5%		ADM-10-151	CPR-150J	CD10E151J500	DM-10-151J	SX315	424MC1500J501
C105	47 5%		ADM-10-470	CPR-47J	CD10E470J500	DM-10-470J	SX447	424MC470J501
C106	.01 50V		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C107	68 N750 5%	#510-3020-680		DTN-68				10TCU-Q68
C108	120 N750 5%			TCN-120			CN7312	10TCU-T12
C109	.01 50V		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C110	56 N750 5%	#510-3020-560		TCN-56				10TCU-Q56
C111	68 N750 5%	#510-3020-680		DTN-68				10TCU-Q68
C112	.01 16V		TTP-01	UK16-103	HOY101ZV103M		TA110	TG-S10
C113	.01 16V		TTP-01	UK16-103	HOY101ZV103M		TA110	TG-S10
C114	.01 16V		TTP-01	UK16-103	HOY101ZV103M		TA110	TG-S10
C115	6.8 N750 5%	#510-3020-689			CZ601UJ6R8D		CN7568	10UCU-V68
C116	18 N750 5%			TCN-18	CZ601UJ180J		CN7418	10TCU-Q18
C117	22 N750 5%	#510-3020-220		DTN-22			CN7422	10TCU-Q22
C118	.01 50V		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C119	.01 50V		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C120	.01 50V		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10

Johnson Part Number.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Volume	1meg	022-1647-001	F2-1meg, SRS012, CA005, BA006	A47-1meg-Z, RS-3 or [NP-1meg-Z, UP-A-400] A58S-15K, RS-3	B13-137, SK1, QCB1(1) or [BU2, CF26, SS5, DC1]*	UA16A, SL2500 or [RU16A, SL39, SL2500] or U53
R2	Squelch/Switch	15K, 2W	022-1932-001 (22-1932)				R15ML, DS36, US30
R3	Relative Output Adjust	5000	562-0004-502	T-5000		X201R502B	MTC53L1
R4	Meter Zero, Adjust	300	562-0004-301	T-300		X201R301B	MTC32L1

* "SNAPTROL"

(1) Use QCB1 Bushing instead of Bushing in SK1.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R56	2200 5W	PW5-2250	5W-SQ-2.25K	569-2005-222

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R66	3900 7W	PW10-3900	10W-SQ-3.9K	569-2007-392

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna Matching	023-1700-021			
L2	RF Amp	022-1623-001			
L3	Osc Injection (REC)	023-1176-020			
L4	Input IF	592-5019-001		12-C30	
L5	Interstage IF	592-5019-003		12-C30	
L6	Interstage IF	592-5019-003		12-C30	
L7	Output IF	592-5019-002			
L8	RFC (6.8uh)	022-1832-001		74F686AP	T821
L9	Osc. Injection (Xmtr)	023-1176-019			
L10	Xmtr RF Amp	023-1700-031			
L11	RFC (20uh)	022-1549-001		6152	T300
L12	Plate Tuning	023-1700-024			
L13	Plate Load	023-1700-623			
L101	RFC (2.4mh)	022-1193-001		6152	T300
L102	RFC (20uh)	542-3002-002		4666	T876
T101	Synthesizer Mixer	592-5008-011			
T102	Synthesizer Osc	592-5010-001			

TRANSFORMER (Power)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC .63A .73A *	640V CT 72ma 105ma *	592-3033-001					* Transmit
	SEC. 2	SEC. 3						
	12.8V 2.5A							

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	80,000	3.2	592-1029-002					
		SEC. 2						
		164 DC Resistance						

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	3 1/2" PM 3.2 ohms	589-1004-001		

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						WORKMAN PART No.
		PART No.		BUSS PART No.		LITTELFUSE PART No.		
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	
F1	2 Amp 250V	534-0003-024	534-1002-001	AGC-2	HKP	312002	342012	

MISCELLANEOUS

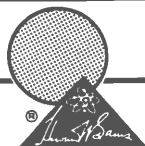
ITEM No.	PART NAME	PART No.	NOTES
K1	Relay	567-0013-002	SPDT
M1	Lamp	147-2103-922	Transmitter Pilot Indicator
M2	Lamp	549-3001-003	(3 used)
M3	Crystal	519-0023-005	6.150MC Receive (Channels 4,8,12,16,20,23)
M4	Crystal	519-0023-008	6.190MC Receive (Channels 1,5,9,13,17,21)
M5	Crystal	519-0023-007	6.180MC Receive (Channels 2,6,10,14,18,22)
M6	Crystal	519-0023-006	6.170MC Receive (Channels 3,7,11,15,19)
M7	Crystal	519-0023-001	5.695MC Transmit (Channels 4,8,12,16,20,23)
M8	Crystal	519-0023-004	5.735MC Transmit (Channels 1,5,9,13,17,21)
M9	Crystal	519-0023-003	5.725MC Transmit (Channels 2,6,10,14,18,22)
M10	Crystal	519-0023-002	5.715MC Transmit (Channels 3,7,11,15,19)
M11	Crystal	519-0024-005	32.900MC Receive & Transmit (Channels 17,18,19,20)
M12	Crystal	519-0024-006	32.950MC Receive & Transmit (Channels 21,22,23)
M13	Crystal	519-0024-001	32.700MC Receive & Transmit (Channels 1,2,3,4)
M14	Crystal	519-0024-002	32.750MC Receive & Transmit (Channels 5,6,7,8)
M15	Crystal	519-0024-003	32.800MC Receive & Transmit (Channels 9,10,11,12)
M16	Crystal	519-0024-004	32.850MC Receive & Transmit (Channels 13,14,15,16)
M17	Meter	554-0014-001	"S" Units 0-200ua DC
M18	Microphone Assembly	250-888-1	Desk, High Impedance Ceramic
S1	Switch	583-2029-101	Includes Crystals

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Knob, Channel Selector	547-0007-002	Grille, Speaker	017-0672-001
Knob, Volume, Squelch	547-0007-001	Cabinet Assembly	023-2568-002
Channel Indicator Dial	032-0154-002	Shell Cabinet	017-0676-002
Front Panel Assembly	023-2577-001	Plate, Rear Chassis	017-1306-003
Panel, Front	015-0798-002	Polyethylene Mtg Feet	574-1005-001
Overlay, Panel Lower	559-2034-001	Window, Dial	559-1007-001
Overlay, Panel Upper	559-2035-001	Grille Cloth	018-0827-006

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
Shielded Antenna Lead	8524 (Stranded) Available in 12 Colors
	8214 Lowest-loss (RG-8/U Type)
	8237 Low-loss (RG-8/U)
	8240 (Solid) Miniature (RG-58/U)
	8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable	Use BELDEN No. 8497 3-Conductor, 1 Shielded, for Press-to-Talk (Neoprene)
	8496 3-Conductor, 1 Shielded, for Press-to-Talk (Vinyl)
Ignition Noise Suppression	Use BELDEN No. 7300-Series Spark-Plug Sets
Bonding Strap	Use BELDEN No. 8661 (3/8 In.)



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

NOTE

ONLY THOSE PERSONS PROPERLY LICENSED ARE PERMITTED TO MAKE REPAIRS OR ADJUSTMENTS WHICH MAY RESULT IN ILLEGAL OPERATION. (REFER TO FCC RULES AND REGULATIONS PART 95, SUBPARTS C & D.)

The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



CLARICON MODEL 15-500

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools:

A1, A2, A3, A11.....GENERAL CEMENT #9089, 8868.....WALSCO #2541, 2587
A4, thru A10GENERAL CEMENT #9440WALSCO #2501

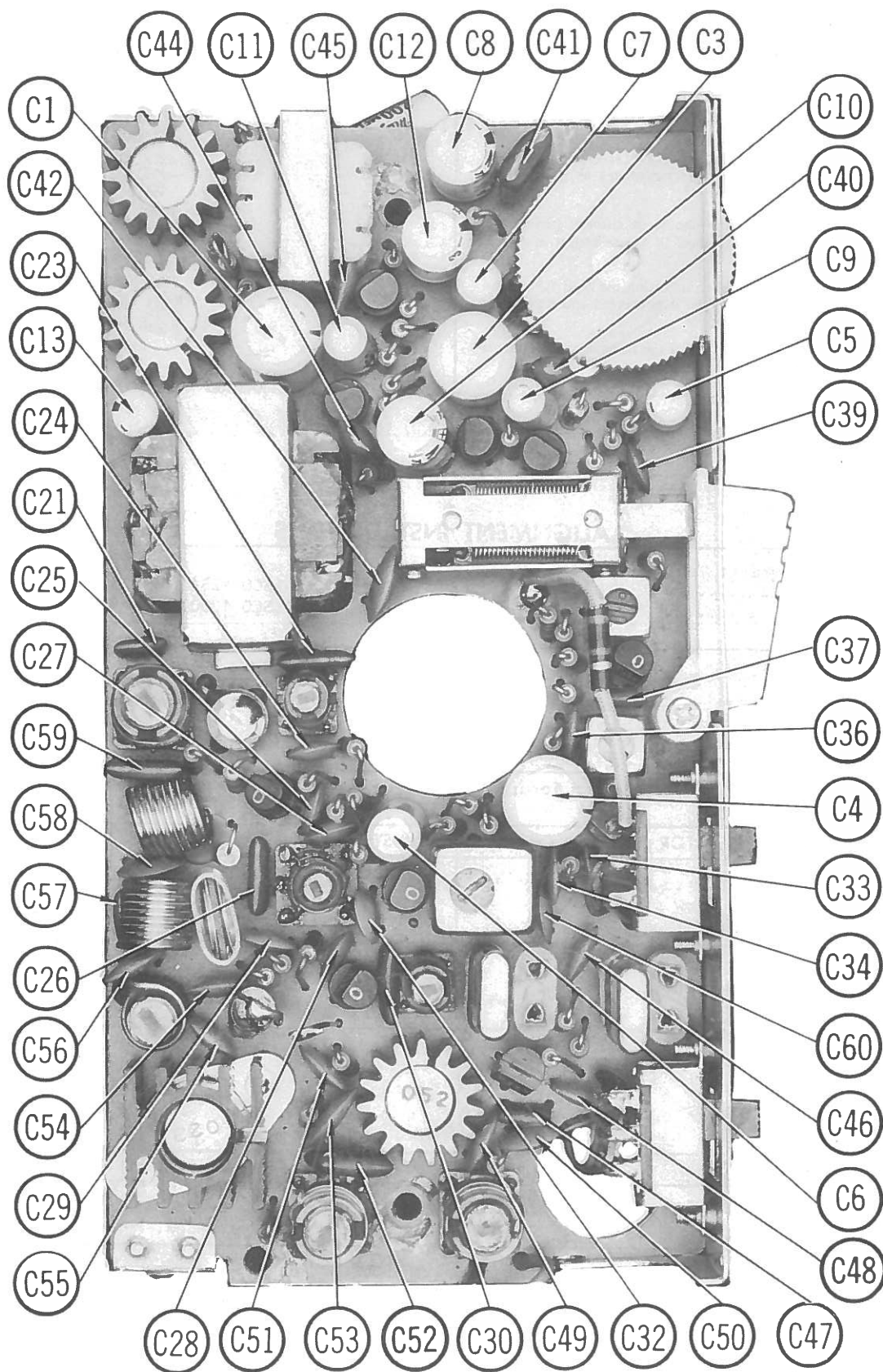
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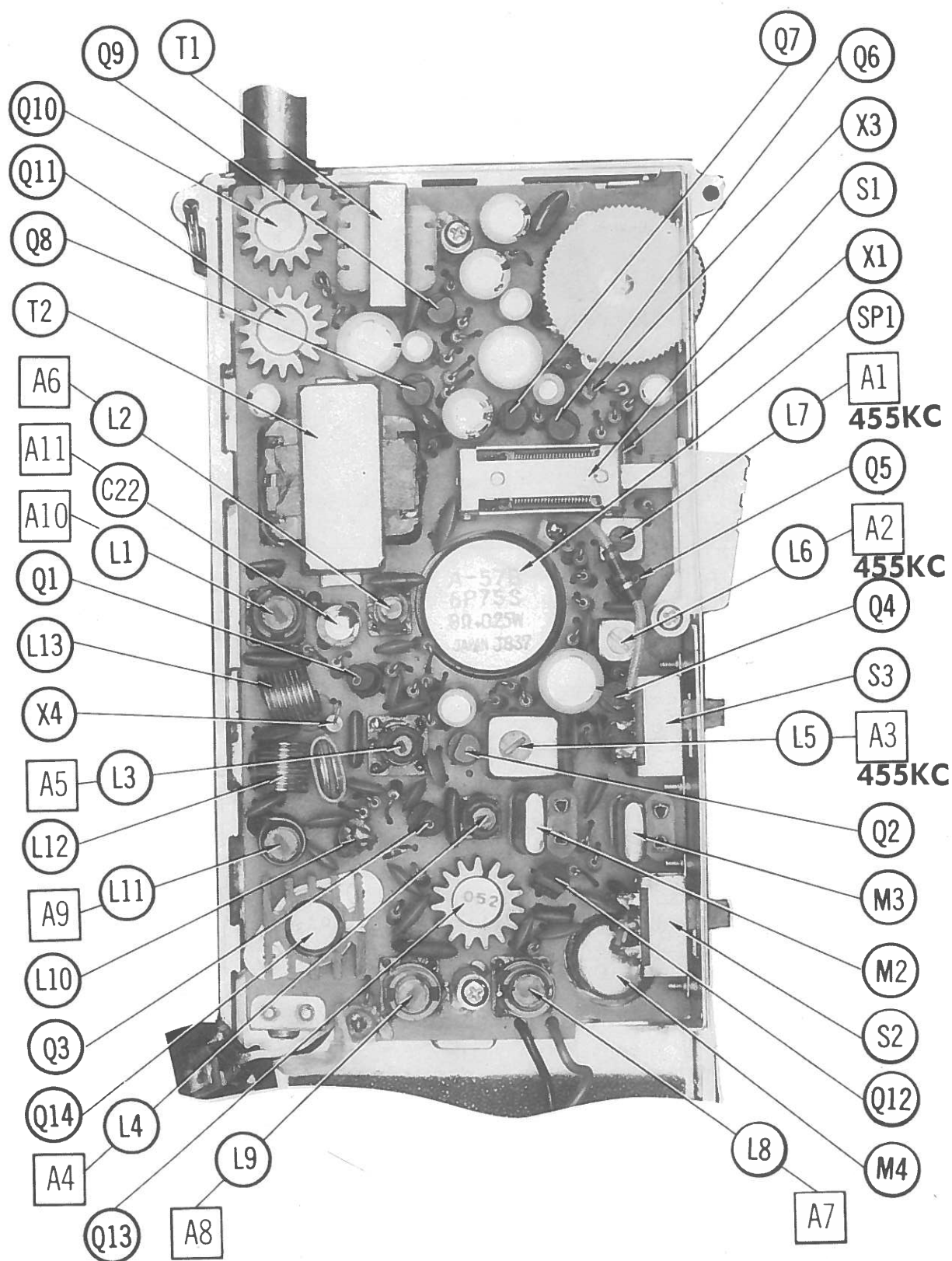
Connect an AC VTVM across Speaker Terminals. Set Volume Control to midrange and Squelch to MINIMUM.

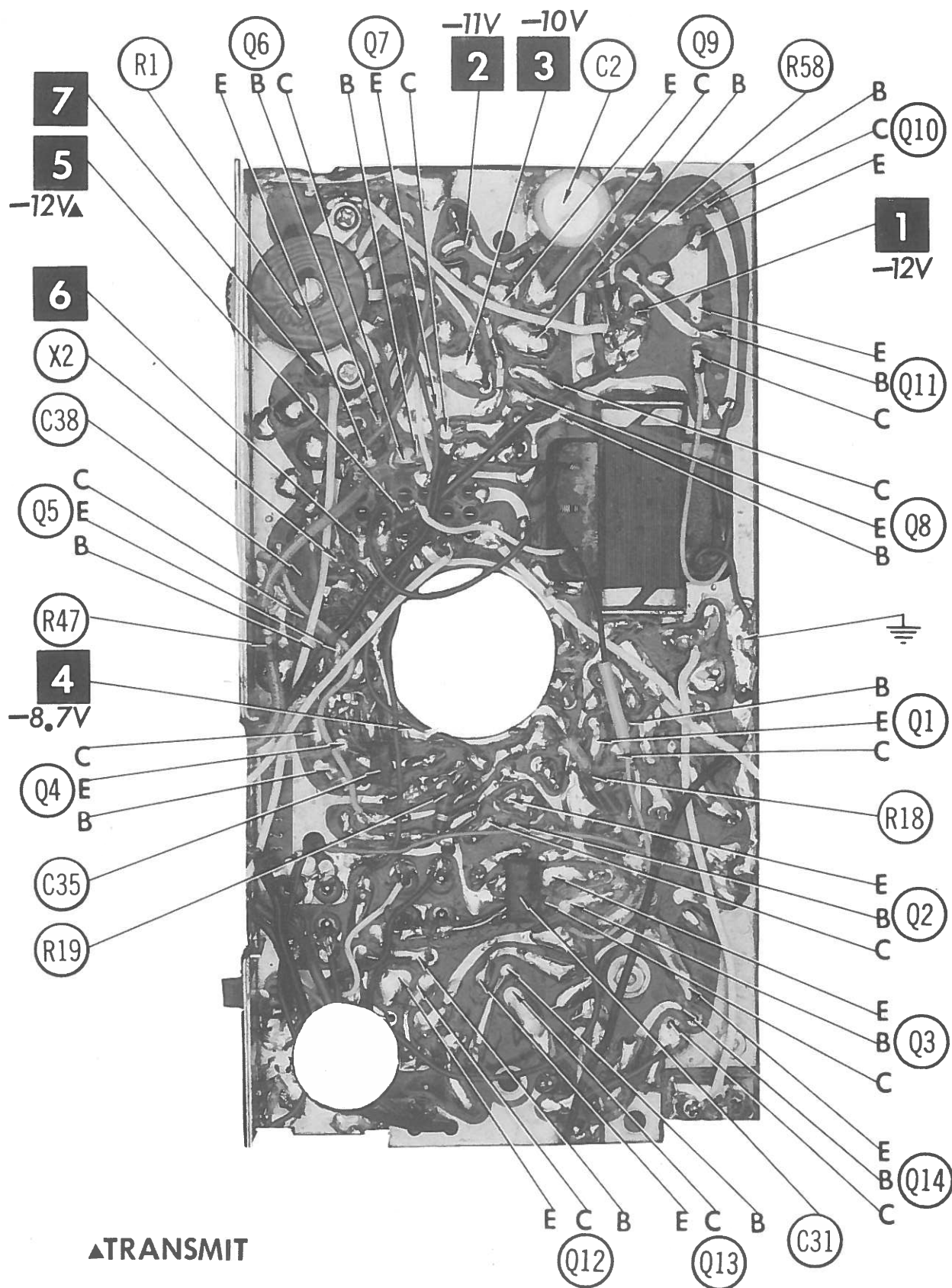
SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru .01mfd to Base of Q2 (Rec. Mixer), low side to ground. Tune to 455KC (Mod.).	Any	A1,A2, A3	Adjust for maximum.
High side thru .01mfd to antenna, low side to ground. Tune to 27.035MC (Mod.).	7	A4,A5, A6	Adjust for maximum.

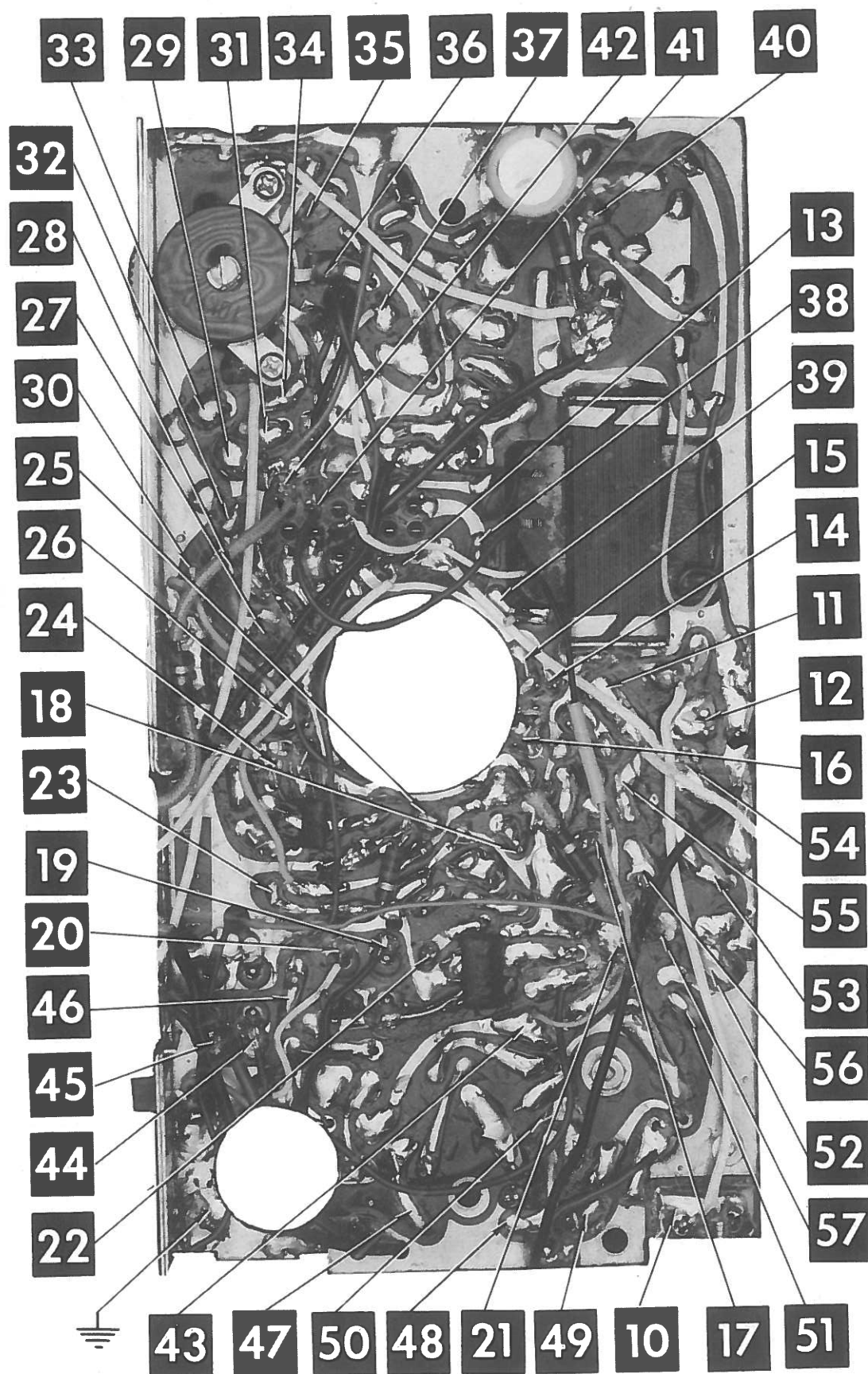
TRANSMITTER

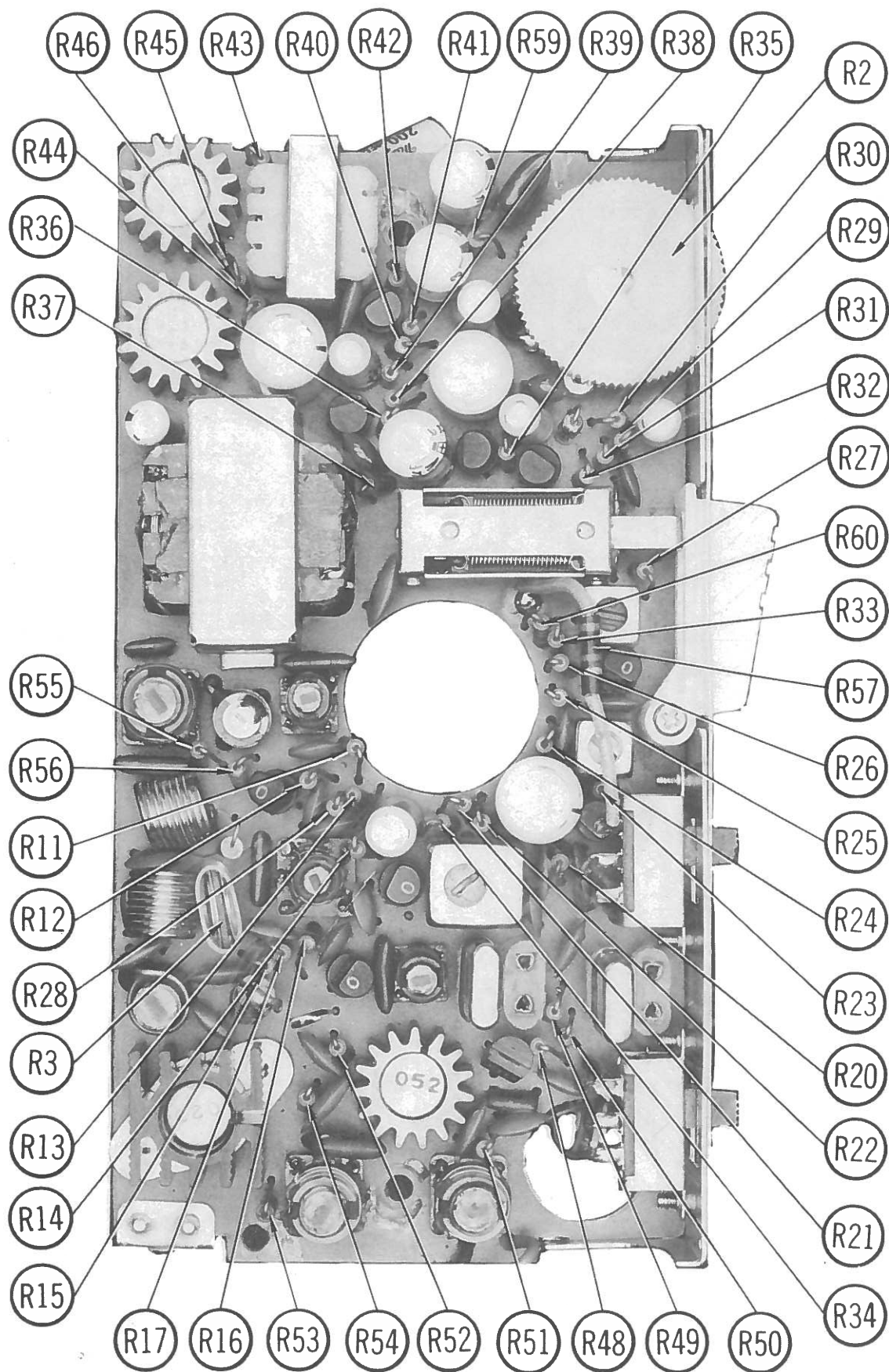
INDICATOR	ADJUST	REMARKS
RF Wattmeter or RF Field Strength Meter.	A7,A8, A9,A10	Adjust for maximum. Adjust A10 with Telescopic Antenna extended.
RF Field Strength Meter.	A11	With Booster Antenna in place, adjust for maximum.











PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA						
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	2SC394	RF Amp		DS-81	GE-17	TR-22	HEP53	SK3018	ECG 108
Q2	2SC394	Rec Mixer		DS-81	GE-17	TR-22	HEP53	SK3018	ECG 108
Q3	2SC371	Rec Osc		DS-81	GE-17	TR-24	HEP50	SK3018	ECG 108
Q4	2SC371	1st IF Amp		DS-72	GE-17	TR-24	HEP50	SK3018	ECG 108
Q5	2SC371	2nd IF Amp		DS-72	GE-17	TR-24	HEP50	SK3018	ECG 108
Q6	2SC372	Squelch		DS-66	GE-10	TR-21	HEP55	SK3020	ECG 108
Q7	2SA495	Squelch				TR-20	HEP52		ECG 106
Q8	2SC372	AF Amp		DS-66	GE-10	TR-21	HEP55	SK3020	ECG 108
Q9	2SC372	Driver		DS-66	GE-10	TR-21	HEP55	SK3020	ECG 108
Q10	2SC486	Output-Modulator				TR-28	HEP713		ECG 128
Q11	2SC486	Output-Modulator				TR-28	HEP713		ECG 128
Q12	2SC773	Xmtr Oscillator		DS-81	GE-17	TR-22		SK3018	ECG 108
Q13	2SC776	Xmtr Buffer							
Q14	2SC778	Final Amp							

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	1N60	1N60	1N60	ECG 109		
X2	1N60	1N60	1N60	ECG 109		
X3	1N60	1N60	1N60	ECG 109		
X4	1N60	1N60	1N60	ECG 109		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	200 15V		BCD12250	EA15-250	NLW250-12	MT1-25	MTV250CK10	TE-1138
C2	200 15V		BCD12250	EA15-250	NLW250-12	MT1-25	MTV250CK10	TE-1138
C3	50 15V		BCD15050	EP15-50	NLW50-15	MT1-16	MTV50CB15	TE-1160
C4	200 10V		BCD10190	EA15-250	NLW200-12	MT1-23	MTV200CK10	TE-1137
C5	1 25V		BCD50001		NLW1-50	MT1-1	MTV1CB50	TE-1200
C6	10 15V		CRE457A	EA15-10	NLW10-15	MT1-5	MTA10D35	TE-1155
C7	3 15V		BCD50003	EP30-2	NLW3-50	MT1-3	MTV3CB50	TE-1150
C8	33 16V		BCD15035	EP15-50	NLW50-15	MT1-16	MTV50CB15	TE-1133
C9	3 15V		BCD50003	EP30-2	NLW3-50	MT1-3	MTV3CB50	TE-1150
C10	33 16V		BCD15035	EP15-50	NLW50-15	MT1-16	MTV50CB15	TE-1133
C11	3 15V		BCD50003	EP30-2	NLW3-50	MT1-3	MTV3CB50	TE-1150
C12	33 16V		BCD15035	EP15-50	NLW50-15	MT1-16	MTV50CB15	TE-1133
C13	1 25V		BCD50001		NLW1-50	MT1-1	MTV1CB50	TE-1200

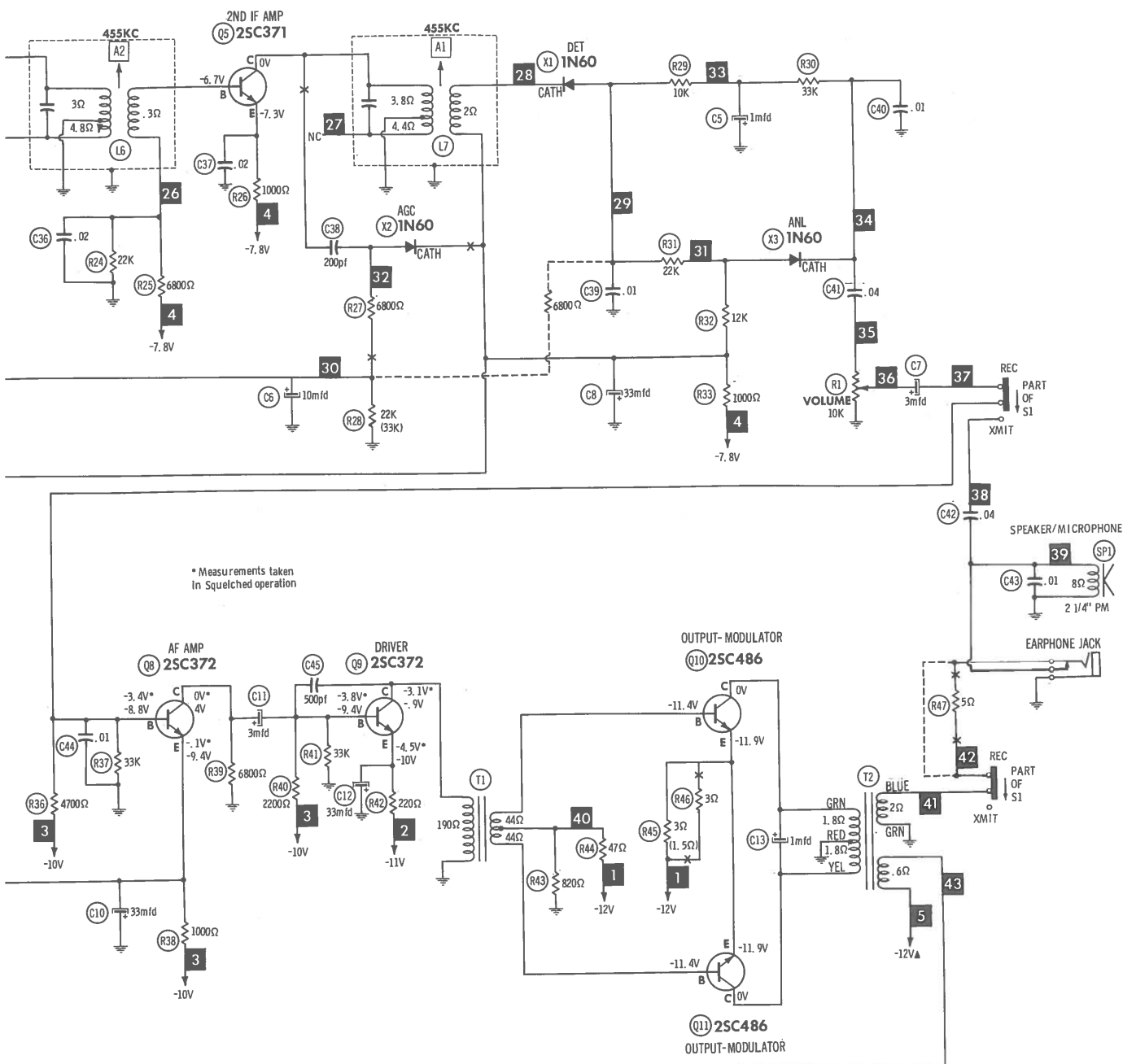
CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	15		ADM-10-150		CD10C150K500	DM-10-150K	SX415	MS-415
C22	9							
C23	30		ADM-10-300	CPR-30J	CD10E300K500	DM-10-300K	SX430	MS-43
C24	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C25	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C26	.01		ADM-10-390	CPR-39J	CD10E390K500	DM-10-390K	SX439	MS-439
C27	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C28	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C29	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C30	30		ADM-10-300	CPR-30J	CD10E300K500	DM-10-300K	SX430	MS-43
C31	30		ADM-10-300	CPR-30J	CD10E300K500	DM-10-300K	SX430	MS-43
C32	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C33	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C34	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C35	1					DM-10-010K		
C36	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C37	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C38	200		GPD X5F201K	DD-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C39	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C40	.01							
C41	.04							
C42	.04						GP140	
C43	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C44	.01							
C45	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C46	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C47	20		ADM-10-200	CPR-20J	CD10E200K500	DM-10-200K	SX420	MS-42
C48	100		GPD X5F101K	DD-101	JBZ601YP101K	CCD-101	GP310	10TS-T10
C49	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C50	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C51	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C52	40		ADM-10-390	CPR-39J	CD10E390K500	DM-10-390K	SX439	MS-439
C53	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C54	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C55	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C56	200		GPD X5F201K	DD-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C57	10		ADM-10-100		CD10C100K500	DM-10-100K	SX410	MS-41
C58	150		GPD X5F151K	DD-151	JBZ601YP151K	CCD-151	GP315	10TS-T15
C59	80		ADM-10-820	CPR-82J	CD10E820K500	DM-10-82K	SX482	424MC82R0J500
C60	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20

(CONTINUED ON PAGE 52)

CLARICON MODEL 15-500





TRANSISTOR TERMINALS GUIDES



Q1 THRU Q9



Q12



Q10, Q11, Q13, Q14

NC No Connection

★ Value varies; replace with original value.

⊥ Denotes ground (Measurement reference unless otherwise indicated)

--- Indicates connection used in some versions.

✕ Indicates connection not used in some versions.

* Omitted in some versions.

⊙ See parts list.

Measurements taken with switching in position shown unless otherwise indicated.

▲ Measured in "Transmit" position.

Values shown in () are used in some applications.

Resistors are 1/2W or less, 10% or 20%, unless otherwise indicated.

Supply voltage maintained at rated value for measurements.

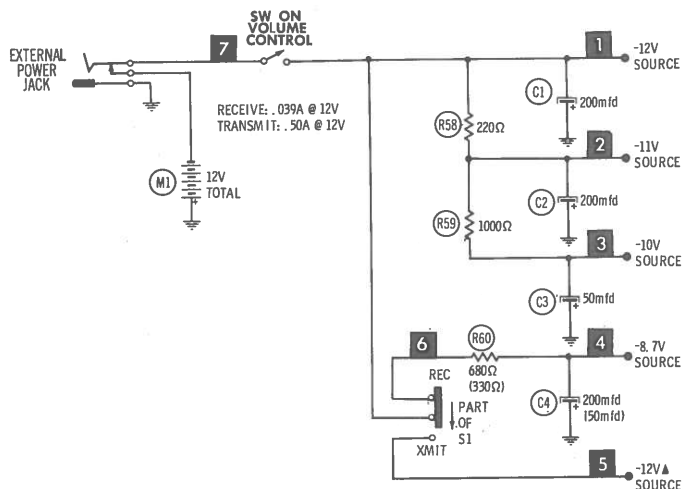
Voltage and resistance measured with VTVM or equivalent meter,

no signal applied and controls adjusted for normal operation.

Controls viewed from actuator end. Arrow indicates clockwise rotation.

Numbers assigned to terminals may not be found on the unit.

Transistor resistances vary widely. No resistance measurements taken.



CLARICON MODEL 15-500

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1 R2 R3	Volume/Switch Squelch Meter Adjust	10K 10K 20K (2)		B16-216 (1) B16-216 (1) T-20K (3)		X201R253B (3)	MTC24L1 (3)

(1) Use original knob. (2) 10K may be used in some versions. (3) Cut off one of the end terminals & bend to fit "PC" board.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13	Antenna Coupling REC Input RF Amp REC Oscillator Input IF & Filter Interstage IF Output IF Xmtr Oscillator Xmtr Buffer RFC (.8uh) Final Amp Load Pi Network (9 turns) Pi Network (9 turns)		19-3001	8814 8811 8812 6175	T804

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MFR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2	1 CT							

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MFR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	8	8						
		SEC.2						
		.6 DC Resistance						

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFR. PART No.	QUAM PART No.	
SP1	2 1/4" PM 8 ohms		22A06Z8	Speaker - Microphone

BATTERIES

ITEM No.	VOLTAGE	MFR. PART No.	REPLACEMENT DATA		NOTES
			EVEREADY	MALLORY	
M1	12V 12.5V		1015 or E91 or E9	M15R or MN1500 or ZM9	8 Required or 10 Nickel-Cadmium

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2 M3 M4	Crystal Crystal Meter		Receive: 26.580MC Transmit: 27.035MC Battery - RF Power Indicator

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead	Use BELDEN No. 8214 Lowest-loss (RG-8/U Type) 8237 Low-loss (RG-8/U) 8240 (Solid) Miniature (RG-58/U) 8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable	Use BELDEN No. 8499 Single-Conductor Shielded (Neoprene) 8498 Single-Conductor Shielded (Vinyl)
Ignition Noise Suppression	Use BELDEN No. 7300-Series Spark-Plug Sets
Bonding Strap	Use BELDEN No. 8661 (3/8 In.)



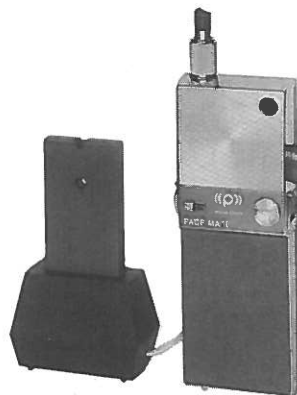
NOTE

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The frequency of the transmitter should be checked periodically with a secondary frequency standard to insure proper and legal operation.

Best results will be obtained when adjusting the final RF output circuit if the antenna normally used is connected and the chassis is as nearly in the cabinet as possible.

Connect either 50-ohm dummy load or the normally used antenna system.



PACE MODEL PACE-MATE 2 W/BATTERY PACK 5812

ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: A1 thru A9...GENERAL CEMENT #8290,8277,8276
WALSCO #2512, 2515, 2525
A10 thru A12..FABRICATE TOOL
A13 thru A16..GENERAL CEMENT #9440...WALSCO #2501

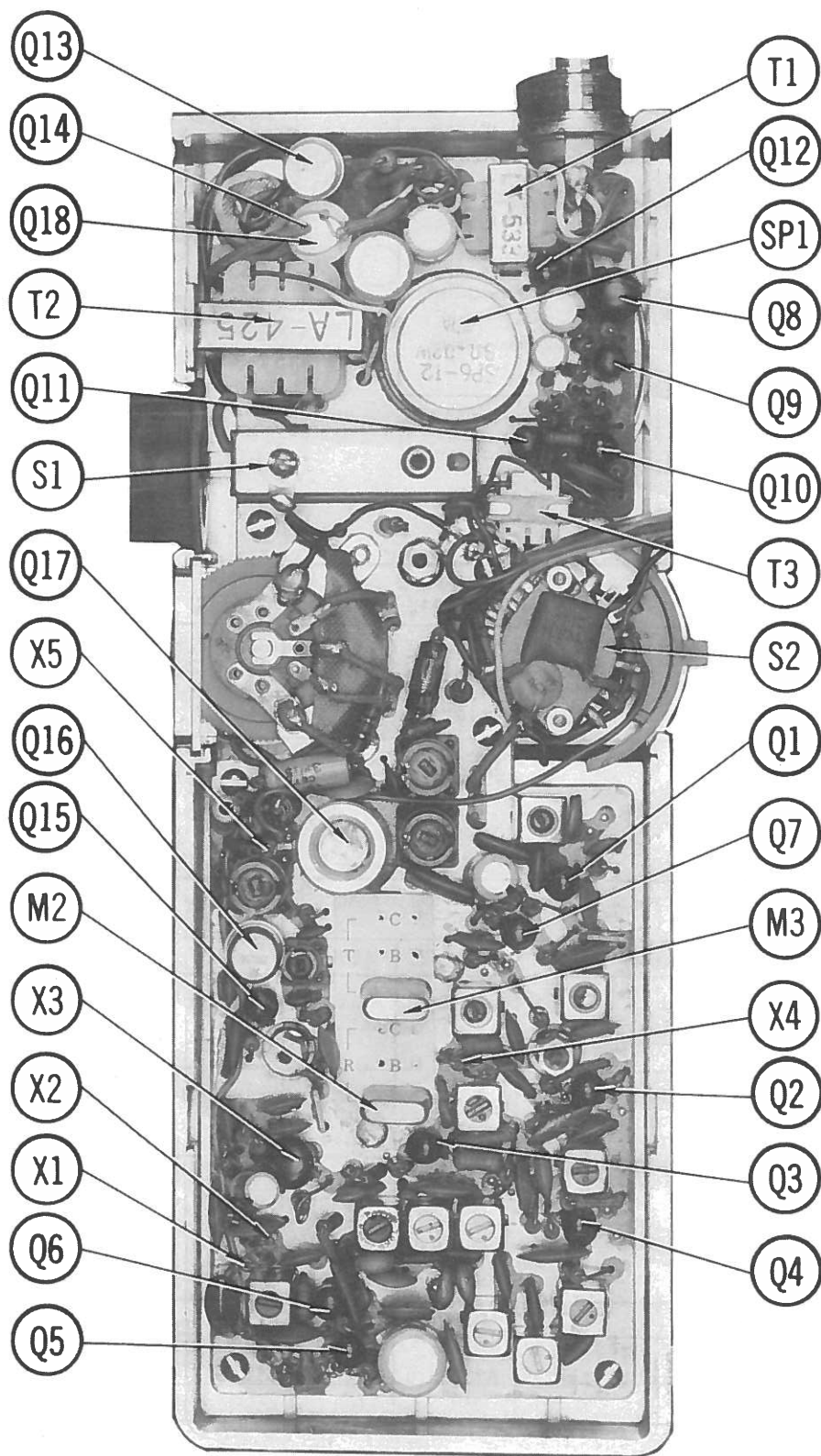
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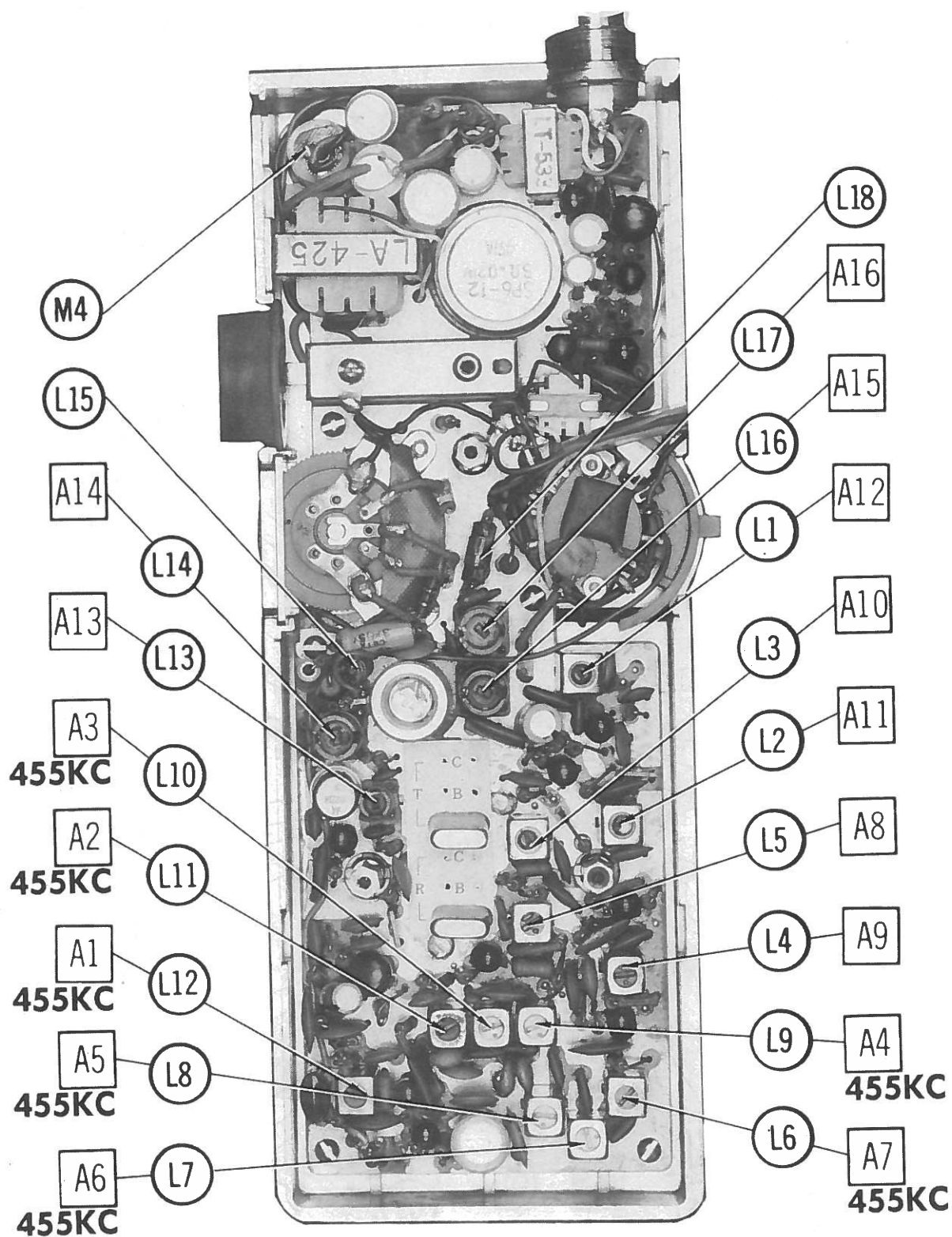
Connect an AC VTVM across terminals 2 and 7 of accessory plug. Set Volume Control to midrange and Squelch Control to MINIMUM.

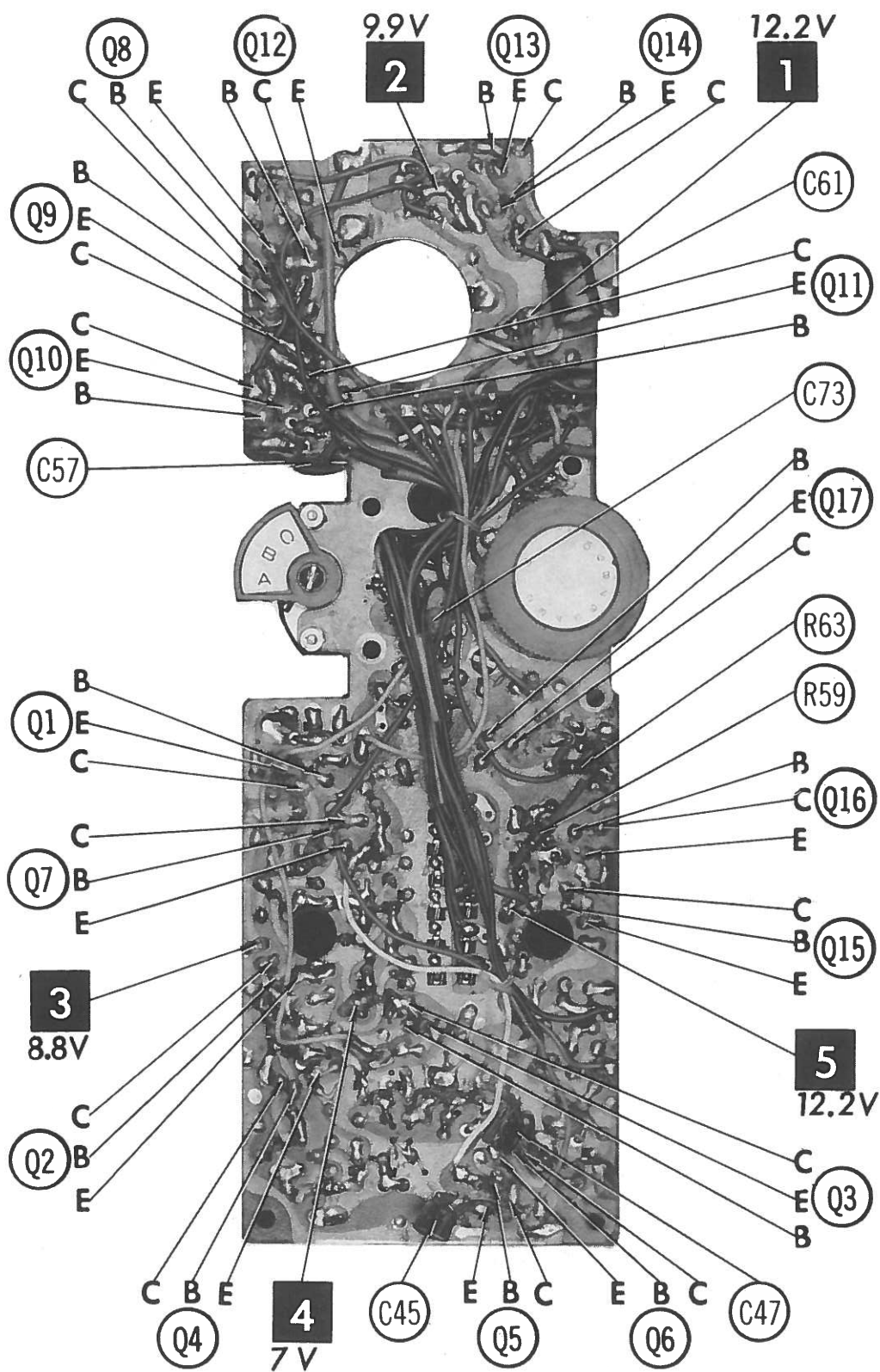
SIGNAL GENERATOR	CHANNEL	ADJUST	REMARKS
High side thru .01mfd to Base of Q4 (2nd Rec Mixer), low side to ground. Tune to 455KC (Mod.).	Any	A1 thru A7	Adjust for maximum.
High side thru .01mfd to antenna connector, low side to ground. Tune to 27.085MC (Mod.).	11	A8 thru A12	Adjust for maximum.

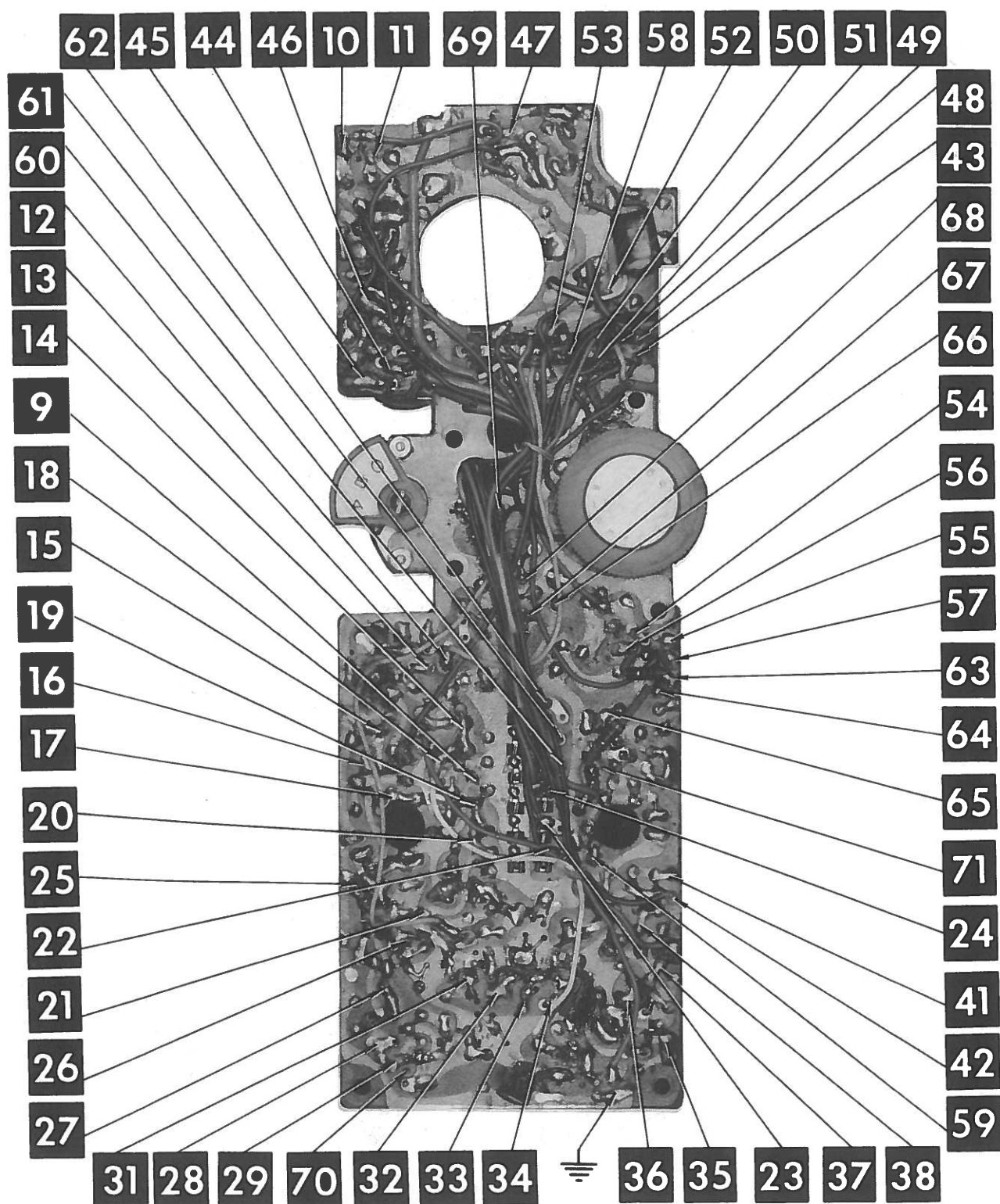
TRANSMITTER

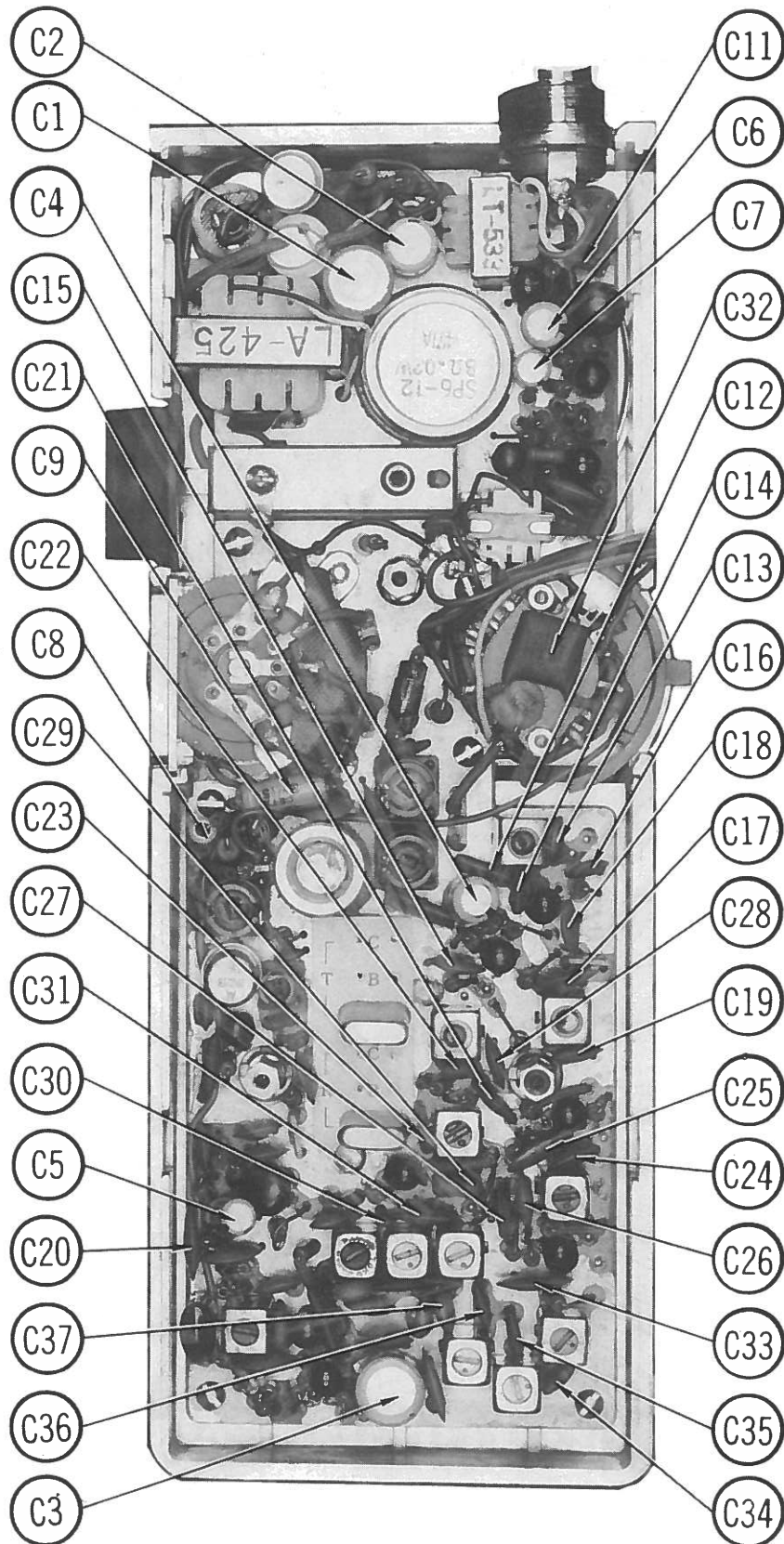
INDICATOR	ADJUST	REMARKS
RF Wattmeter or RF Field Strength Meter	A13 thru A16	Key Transmitter. Adjust for maximum.

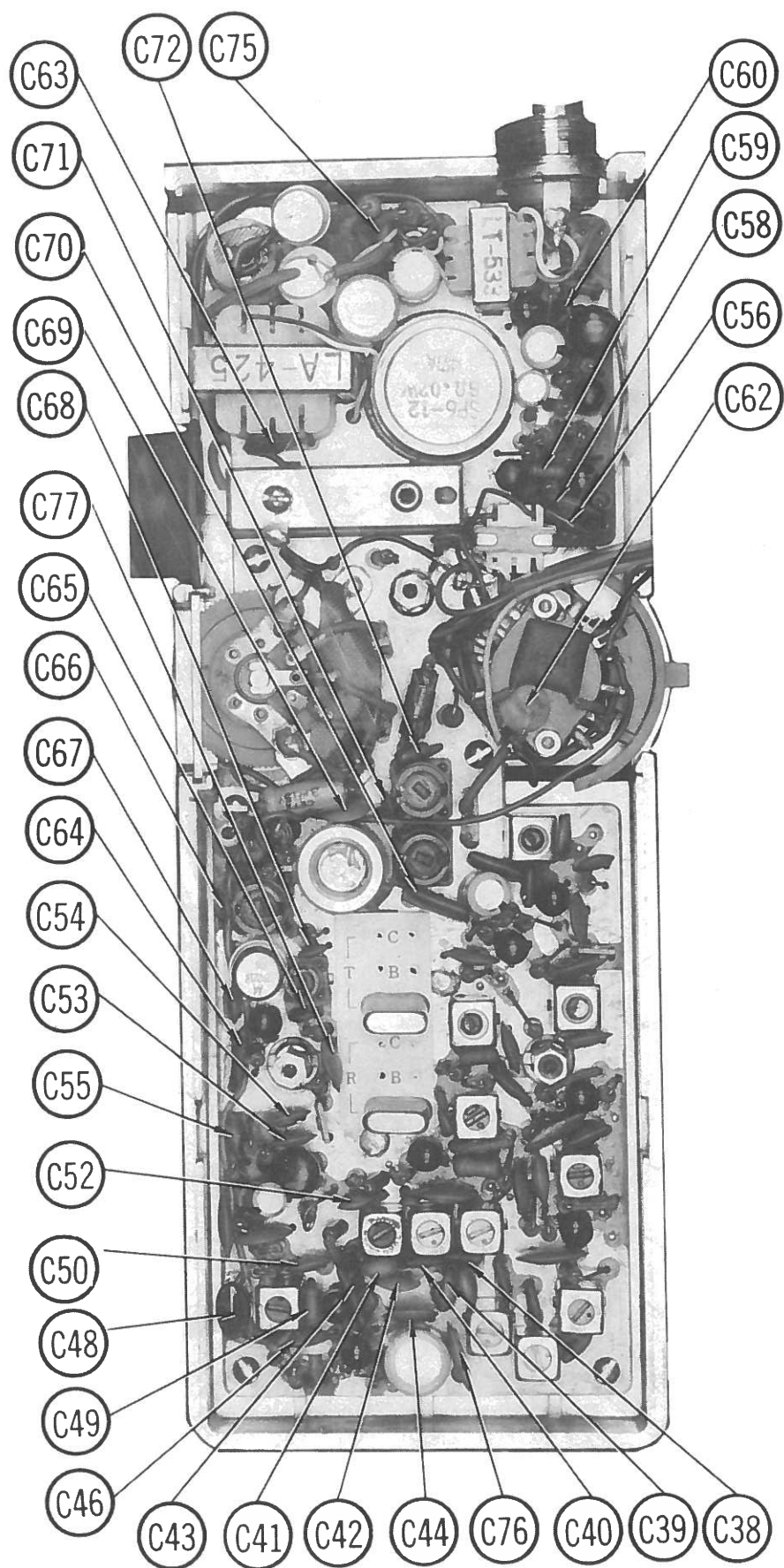


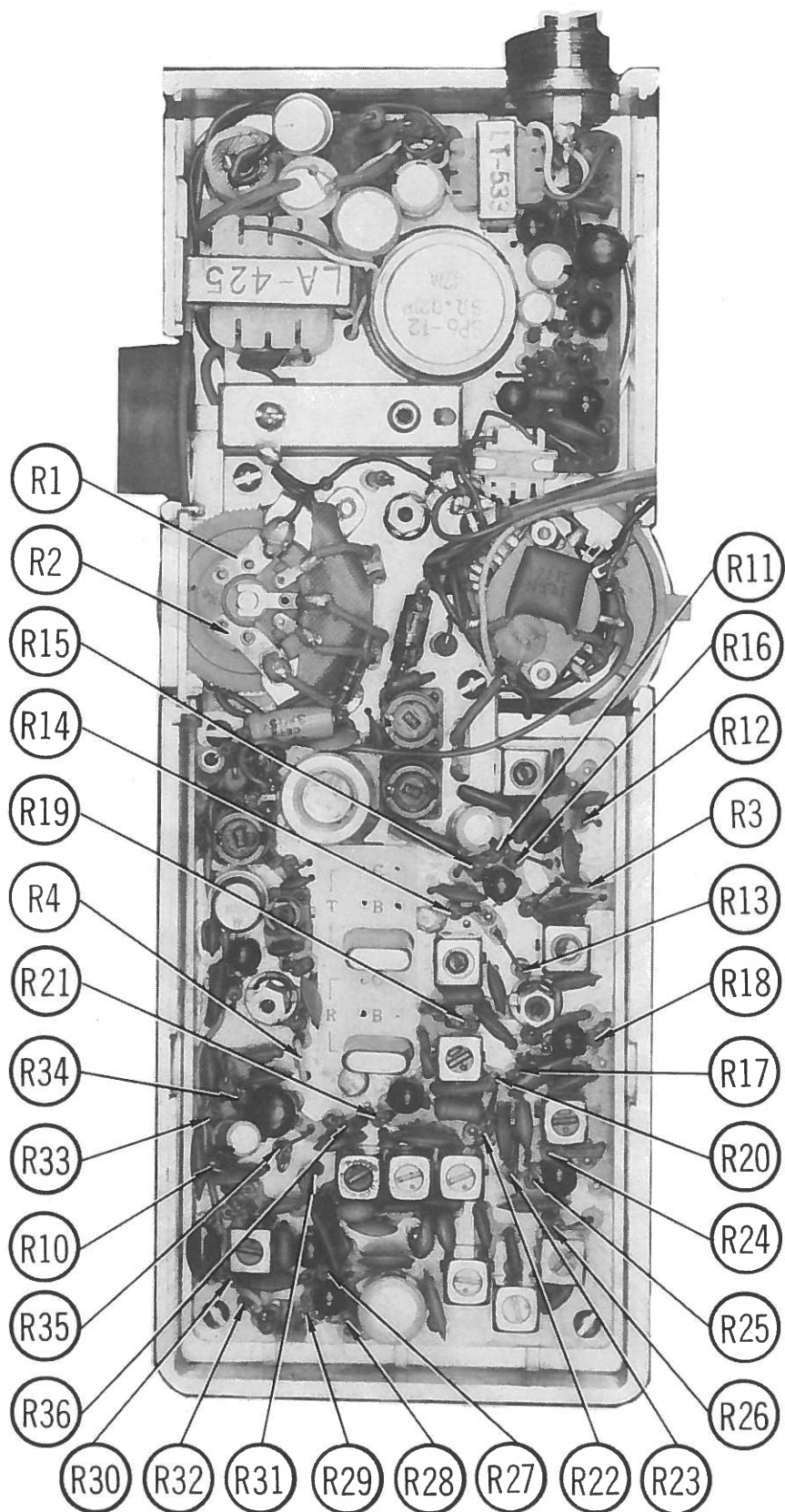


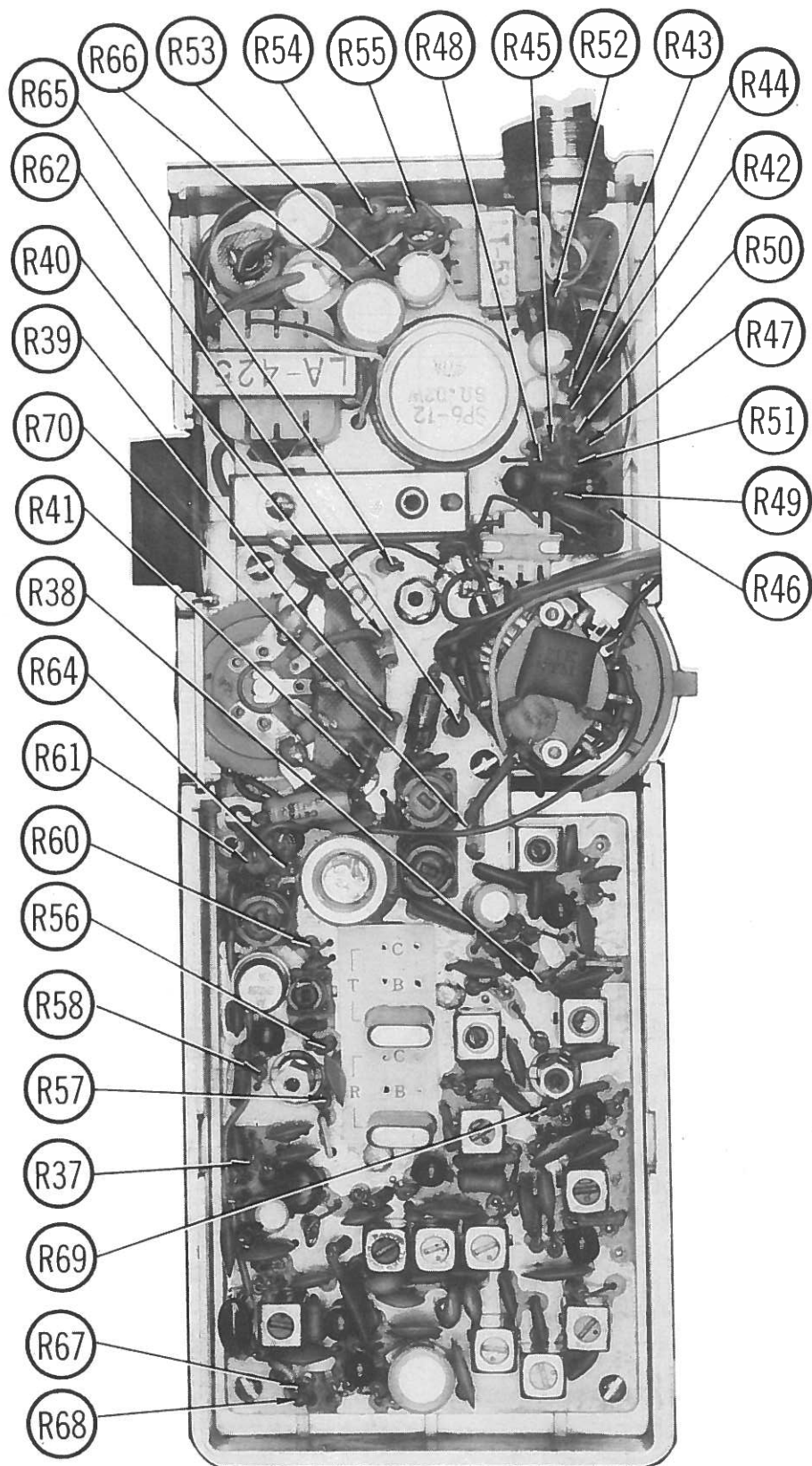


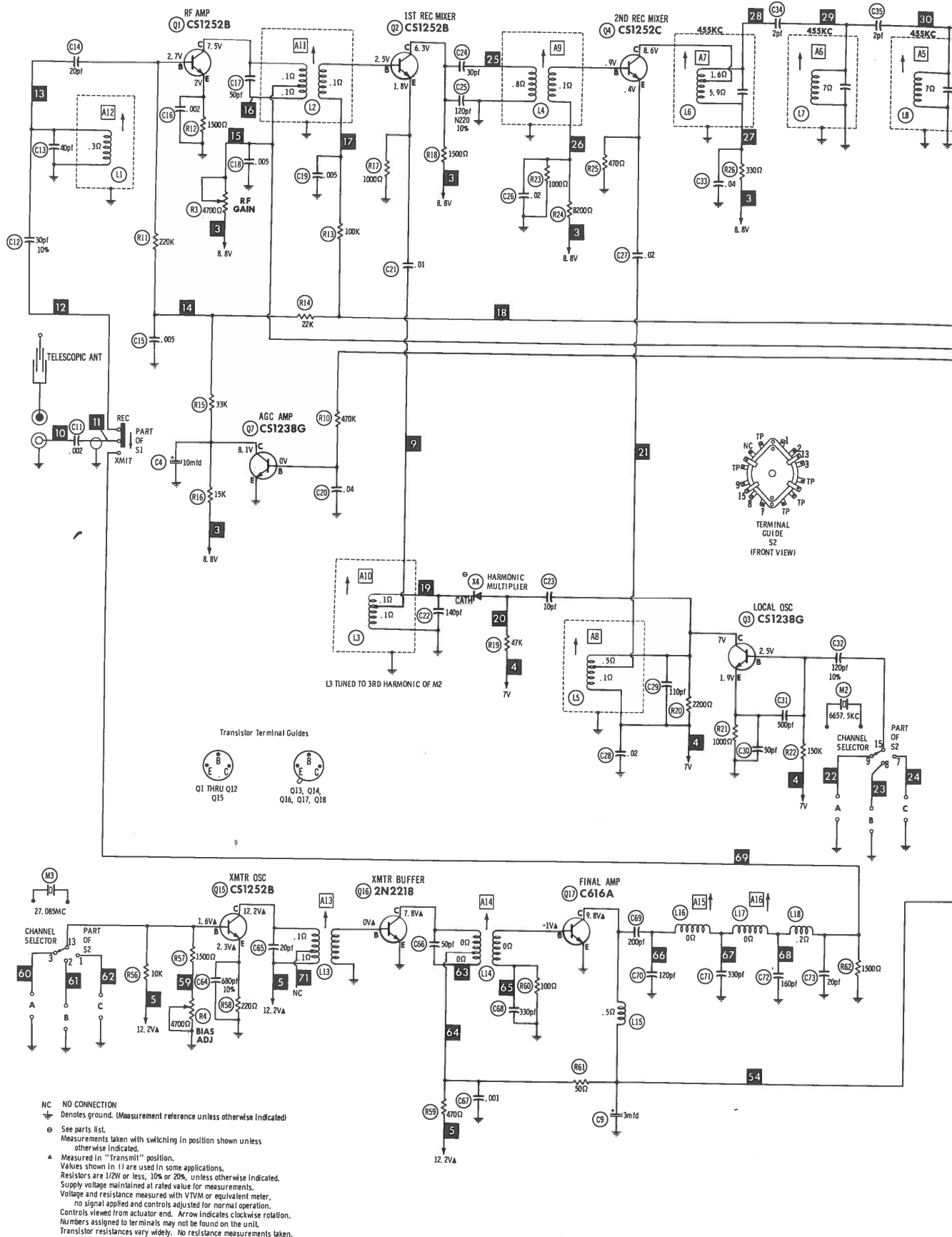








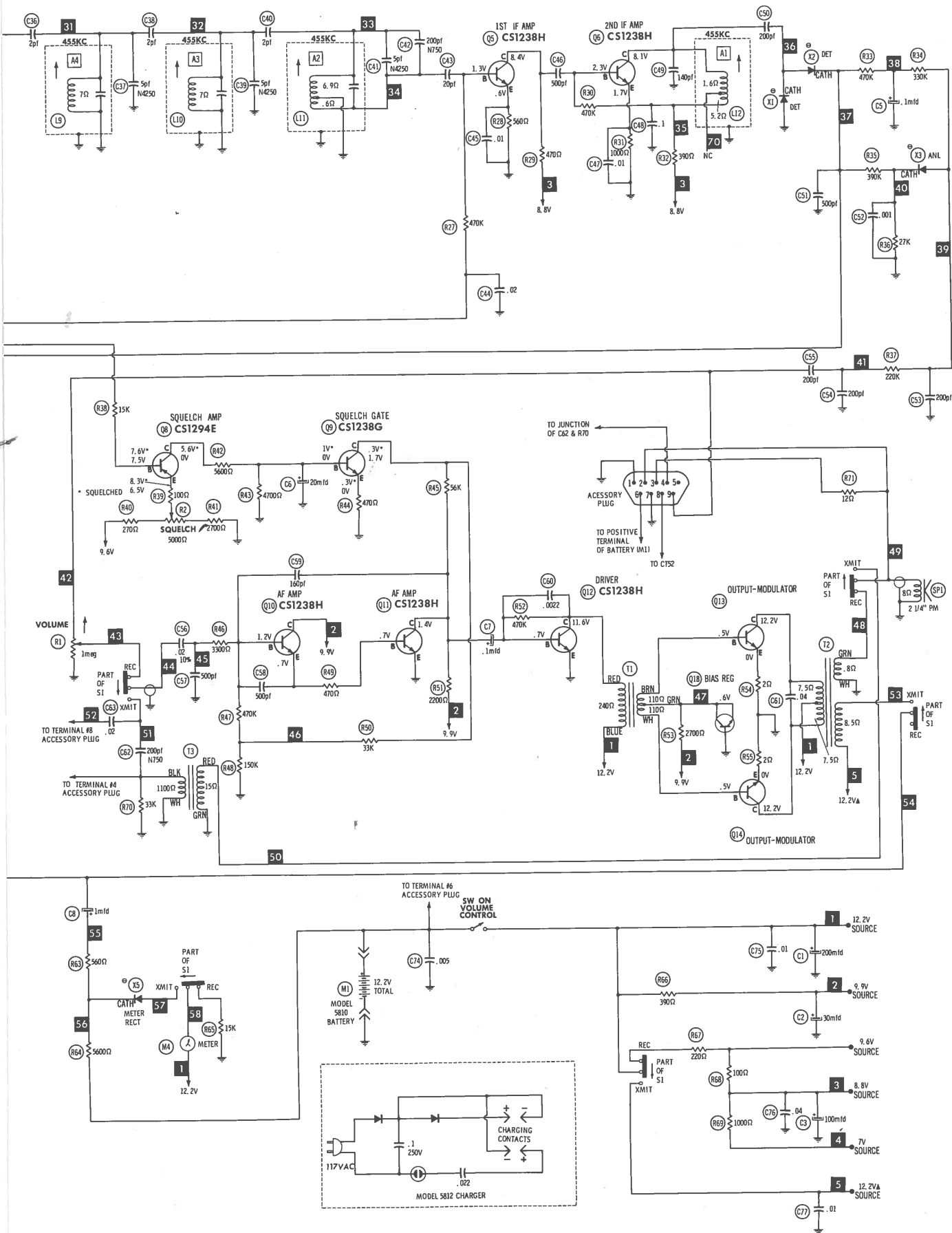




A PHOTOFACIT STANDARD NOTATION SCHEMATIC

with **CIRCUITRACE**

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PACE MODEL PACE-MATE 2 w/5812

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA						
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	CS1252B	RF Amp		DS-81	GE-17	TR-22	HEP50	SK3018	ECG 108
Q2	CS1252B	1st Rec Mixer		DS-81	GE-17	TR-22	HEP50	SK3018	ECG 108
Q3	CS1238G	Rec Oscillator		DS-81	GE-17	TR-22	HEP50	SK3018	ECG 108
Q4	CS1252C	2nd Rec Mixer		DS-81	GE-17	TR-22	HEP50	SK3018	ECG 108
Q5	CS1238H	1st IF Amp		DS-72	GE-20	TR-21	HEP54	SK3018	ECG 108
Q6	CS1238H	2nd IF Amp		DS-72	GE-20	TR-21	HEP54	SK3018	ECG 108
Q7	CS1238G	AGC Amp		DS-72	GE-20	TR-21	HEP54	SK3018	ECG 108
Q8	CS1294E	Squelch Amp		DS-72	GE-20	TR-21	HEP50	SK3018	ECG 108
Q9	CS1238G	Squelch Gate			GE-22	TR-19	HEP51	SK3025	ECG 129
Q10	CS1238H	AF Amp		DS-72	GE-20	TR-21	HEP50	SK3020	ECG 108
Q11	CS1238H	AF Amp		DS-72	GE-20	TR-21	HEP54	SK3020	ECG 108
Q12	CS1238H	Driver		DS-72	GE-20	TR-21	HEP54	SK3020	ECG 108
Q13		Output-Modulator		DS-66	GE-18	TR-25	HEP54	SK3020	ECG 108
Q14		Output-Modulator		DS-66	GE-18	TR-25	HEP243	SK3024	ECG 123
Q15	CS1252B	Xmtr Osc.		DS-66	GE-18	TR-25	HEP243	SK3024	ECG 123
Q16	2N2218	Xmtr Buffer		DS-81	GE-17	TR-22	HEP50	SK3018	ECG 108
Q17	C616A	Final Amp							
Q18		Bias Regulator		DS-66	GE-18	TR-25	HEP243	SK3024	ECG 123

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS	NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	
X1	2N3641	1N34AS	1N34A	ECG 109		
X2		1N34AS	1N34A	ECG 109		
X3						
X4		1N34AS	1N34A	ECG 109		
X5		1N34AS	1N34A	ECG 109		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	200	15V	BCD20200 BCD15025 BCD10100 BCD25010	EA15-250	NLW200-15	MT1-23	MTV200CK15	TE-1164
C2	30	15V		EP15-25	NLW30-15	MT1-14	MTV30CB25	TE-1158
C3	100	10V		EP15-100	NLW100-12	MT1-19	MTV100CD10	TE-1135
C4	10	15V		EP15-10	NLW10-15	MT1-5	MTV10CB50	TE-1155
C5	.1	25V		CK-104	TYR13BF104K		TAS104K035POA	196D104X0035 DB
C6	20	10V	BCD15020	EP15-25	NLW20-15	MT1-10	MTV20CD50	TE-1130
C7	.1	25V		CK-104	TYR13BF104K		TAS104K035POA	196D104X0035 DB
C8	1	10V	BCD50001 CRE752A	EA15-2	NLW1-50	MT1-1	MTV1CB50	TE-1200
C9	3	15V			NLW3-25	MT1-3	MTA3D50	TE-1150

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	.002		GPD X5F202K	DM-202	JBX601YP202K	CCD-202	GP220	2SS-D20
C12	30 10%		ADM-15-300	CPR-30J	CD15E300J500	DM-15-300J	SX430	MS-43
C13	40 N220					*	*	10TCR-Q39
C14	20			DD-200		CCD-200	GP420	10TS-Q20
C15	.005		TTP-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C16	.002		GPD X5F202K	DM-202	JBX601YP202K	CCD-202	GP220	2SS-D20
C17	50		GPD X5F500K	DD-500	JBZ601YP500K	CCD-500	GP450	10TS-Q50
C18	.005		TTP-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C19	.005		TTP-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C20	.04			DD-403		CCD-502	GP140	
C21	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C22	140							
C23	10		GPD COH100K	DD-100	CZ601CG100K	CCD-100	GP410	10TS-Q10
C24	30			DD-300		CCD-300	GP430	10TS-Q30
C25	120 10% N220					*	*	10TCR-T12
C26	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C27	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C28	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C29	110							
C30	50		GPD X5F500K	DD-500	JBZ601YP500K	CCD-500	GP450	10TS-Q50
C31	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C32	120 10%		ADM-15-121	CPR-120J	CD15F121J500	DM-15-121J	SX312	MS-312
C33	.04			DD-403			GP140	
C34	2							

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CAPACITORS(cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL- DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C35	2							
C36	2							
C37	5 N4250					*		
C38	2							
C39	5 N4250					*		
C40	2							
C41	5 N4250					*		
C42	200 N750		N750-DI 200	DTN-200		CCTN-201	CN7320	10TCU-T20
C43	20		ADM-15-200	CPR-20J	CD15E200J500	DM-15-200J	SX420	MS-42
C44	.02		TTP-02	CK-203	HOR101ZV203P	CCD-203	TA120	TG-S20
C45	.01		V1612S1	CPR-10000J	WMF1S1	1DP-1-103	PVC211	225P10391WD3
C46	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C47	.01		DBE6S1	CPR-10000J	DMF2S1	4DP-1-103	PVC211	2TM-S10
C48	.1		DBE2P1		DMF1P1	1DP-2-104	PVC101	225P10491WD3
C49	140							
C50	200		GPD X5F201K	DM-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C51	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C52	.001		GPD X5F102K	DM-102	JBZ601YP102K	CCD-102	SM210	2SS-D10
C53	200		GPD X5F201K	DM-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C54	200		GPD X5F201K	DM-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C55	200		GPD X5F201K	DM-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C56	.02 10%		V1614S2		DPMS2S2	1DP-1-203	PVC212	2PS-S20
C57	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C58	500		GPD X5F501K	DM-501	JBZ601YP501K	CCD-501	GP350	10TS-T50
C59	160							
C60	.0022		V1614B22	CPR-2200J	WMF1D22	6DP-1-222	PVC6222	6PS-D22
C61	.04		DBE6S4		DPMS6S4	1DP-1-403	PVC114	6PS-S40
C62	200 N750		N750-DI 200	DTN-200		CCTN-201	CN7320	10TCU-T20
C63	.02		V1614S2		DPMS2S2	1DP-1-203	PVC212	2PS-S20
C64	680 10%		ADM-19-681	CPR-680J	CD19F681J500	DM-16-681J	SX368	MS-368
C65	20			DD-200		CCD-200	GP420	10TS-Q20
C66	50		GPD X5F500K	DD-500	JBZ601YP500K	CCD-500	GP450	10TS-Q50
C67	.001		GPD X5F102K	DM-102	JBZ601YP102K	CCD-102	SM210	2SS-D10
C68	330		GPD X5F331K	DD-331	JBZ601YP331K	CCD-331	GP333	10TS-T33
C69	200		GPD X5F201K	DM-201	JBZ601YP221K	CCD-201	GP320	10TS-T20
C70			ADM-15-121	CPR-120J	CD15F121J500	DM-15-121J	SX312	MS-312
C71	330		GPD X5F331K	DD-331	JBZ601YP331K	CCD-331	GP333	10TS-T33
C72	160							
C73	20			DD-200		CCD-200	GP420	10TS-Q20
C74	.005		TTP-005	CK-502	HOY101ZV502P	CCD-502	TA250	TG-D50
C75	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10
C76	.04			DD-403			GP140	
C77	.01		TTP-01	CK-103	HOY101ZV103P	CCD-103	TA110	TG-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST- ANCE	REPLACEMENT DATA			
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.
R1	Volume/Switch	1meg				
R2	Squelch	5000		B16-214		
R3	RF Gain	4700				
R4	Bias Adjust	4700				

(1) Use original Knob.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	Antenna Matching	(LC117)			
L2	RF Amp	(LC118)			
L3	1st Rec Oscillator	(LB200)			
L4	1st Rec Mixer	(LA349)			
L5	Local Oscillator	(LA299)			
L6	Input IF	(LA350)			
L7	Interstage IF	(LA351)		8811 (1)	
L8	Interstage IF	(LA351)		8811 (1)	
L9	Interstage IF	(LA351)		8811 (1)	
L10	Interstage IF	(LA351)		8811 (1)	
L11	Interstage IF	(LA353)			
L12	Output IF	(LA352)			
L13	Xmtr Oscillator				
L14	Xmtr Buffer	(LC113)			
L15	RFC (2.9uh)			74F276AP	T814
L16	Pi Network	(LC120)			
L17	Pi Network	(LC125)			
L18	RFC (1.3uh)			74F126AP	T807

(1) Clip unused pin.

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	2	1		(LT-533)					

TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T2	72	8	(LA-425)					
		SEC. 2						
		8.5 DC Resistance						

TRANSFORMER

ITEM No.	TURNS RATIO			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T3	1	6		(LA-430)					

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	2 1/4" PM 8 ohms	(SP6-12)		Speaker/Microphone

BATTERIES

ITEM No.	VOLTAGE	MFGR. PART No.	REPLACEMENT DATA		NOTES
			EVEREADY	MALLORY	
M1	12.2V (225ma)	5810			Nickel-Cadmium Rechargeable Battery.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M2 M3 M4 S1 S2	Crystal Crystal Meter Switch Switch Charger	Model 5812	Receive; 6657.5KC Transmit; 27.085MC RF Power - Battery Push to Talk Channel Selector Charger for Battery #5810

WIRING DATA

General-use Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Antenna Lead	Use BELDEN No. 8214 Lowest-loss (RG-8/U Type) 8237 Low-loss (RG-8/U) 8240 (Solid) Miniature (RG-58/U) 8259 (Stranded) Miniature (RG-58A/U)
Coiled Microphone Cable	Use BELDEN No. 8497 3-Conductor, 1 Shielded, for Press-to-Talk (Neoprene) 8496 3-Conductor, 1 Shielded, for Press-to-Talk (Vinyl)
Ignition Noise Suppression	Use BELDEN No. 7300-Series Spark-Plug Sets
Bonding Strap	Use BELDEN No. 8661 (3/8 In.)